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An Analysis of the Modern Treatment of Severe Burns*

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INTRODUCTION

My interest in the treatment of burns arose three years ago while working with Dr. W. W. L. Glenn upon the physiological changes at the basis of inflammation. At the time, Dr. Glenn, one of the residents in surgery at the Massachusetts General Hospital, was spending a year in my laboratory and we were concerned with the effects of swelling as a problem in healing. We were anesthetizing dogs with nembutal and then cannulating a lymphatic craining one of the feet, so that we could collect normal lymph and compare it with lymph from the foot after causing severe, sterile inflammation. The lymph under such circumstances is in reality the inflammatory exudate with which the inflamed tissue becomes turgescent.

It was necessary to use a method of cuasing inflammation which would not be subject to infection for some time, which would not break the skin and lose inflammatory exudate through the surface, which could be precisely limited in extent and repeated with reasonable accuracy upon other animals or upon other feet of the same animal. The simplest and most satisfactory method for meeting these requirements was immersion of the parts in hot or boiling water for precise periods of time. All such experiments were carried out under complete surgical anesthesia, and recovery observations were so planned as to require but a small number of dogs. I may say, however, that our expectation of necessarily causing painful distress in dogs severely burned under anesthesia and treated immediately by closed-plaster dressings before permitting recovery was happily unrealized. It was as surprising to me as it would be to any of you to find that the foot of a dog could be immersed 45 seconds in boiling water and, if promptly encased in plaster, the dog gave no evidence of pain when he recovered from the anesthetic, indeed had to be confined rather closely in order to prevent injury to the dressing from active use of the burned part.

When Dr. Glenn and I began work, I believed that clotting of the exudate in inflamed, swollen tissues, such as would result from severe scalds, must have a good deal to do with the problem of local healing, since all such exudate must disappear before healing could be complete. It is imperative that exudation from blood vessels should occur in inflamed tissues. Highly active metabolic processes must go on in such regions in order to accomplish removal of dead cells and production of new. Inflamed tissue means tissue supplied with a maximum amount of oxygen through wide dilation of the smallest blood vessels from the blood due to abnormal leakage through the walls of many of the capillaries in the area. The exudate in a region of severe inflammation is practically blood plasma. It contains serum albumin, serum globulin, fibrinogen, and prothrombin. The last two are concerned with clotting. The re-

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action of coagulation takes place when, in the presence of calcium salts, injured tissues provide thromboplastic material. Some years ago, Menkin[1] (1931) showed that fibrin formation in and about foci of inflammation hinders absorption of toxic substances and bacteria by blocking lymphatic drainage. This is true to a certain extent and tends to isolate harmful agents and processes. But the exudate in and from severely injured parts and severe burns forms a good example of a productive sort of injury. It is often far greater in amount and more continuous than can be helpful. It is axiomatic that the size, or better, the volume of any solid part of the body is as definitely set as is the chemical composition of the body fluids. If injury occurs and the part is enlarged temporarily, it does not recover completely unless it returns to the original size, and the presence of unduly large exudation not only promotes infection and deformity, but always delays healing. While recognizing that clotting of exudate was necessary to control hemorrhage and that it might help to isolate infectious processes, it was my feeling that the extensive laying down of clotted plasma through inflamed tissue could not accomplish real good and that swelling, of itself, was a factor accompanying injury which should be considered as something to be prevented or treated, not as the inevitable accompaniment of injury or inflammation which would disappear with time or with control of the cause.

In this direction Glenn, Peterson and I[2] (1942) burned one front paw of an anesthetized dog by two minutes' immersion in boiling water. After several hours, when swelling was maximum, the animal was given a large intravenous injection of heparin so that coagulation was no longer possible. The companion foot was then burned to the same level in the same way. Comparatively slight local swelling occurred, only that due to accumulation of free fluid in the part, in contrast to the fluid imprisoned in the gelatinous coagulum which spread slowly through the first foot. While these experiments were in progress it had become clear that burns were one of the most frequent lessons of this War, and as a member of the Committee on Aviation Medicine, the first National Research Council group selected to attack the medical problems of the War, I had begun to hear a great deal about crippling burns of the hands in aviators. The efforts of our laboratory were turned at once toward exploration of burn problems, making use of techniques and experience in the study of the lymph and blood circulation we had developed over a number of years.

WHAT IS A BURN?

Intelligent attack upon any medical problem must be based upon the most thorough knowledge possible if all that is directly involved in the lesion, the complications promoted by it, and the ways in which methods of treatment combat the situations encountered. A burn is a lesion due to heat in which living cells are killed and neighboring cells injured in every degree. Blood capillaries, arteriovenous anastomotic channels, and the finest arteries and veins are dilated and somewhat increased in permeability as the initial normal physiological reaction to painful irritation, but in addition the heat injury may kill the walls of certain vessels and hemolyze the red cells in them. From this extreme effect upon the endothelium all graduations of damage to capillary walls will be present and it is possible to assert that in a severe superficial burn the capillaries most injured by the heat, but living and capable of recovering, may require a week to become normal in the sense of not leaking plasma excessively if subjected to ordinary pressures of the capillary blood. Abnormal leakage from the capillaries is the dominant continuing characteristic of the burn lesion. It causes loss of plasma into the part and through the part for surface escape. Local accumulation of exudate makes an excelient medium for the growth of micro-organisms, and frequently plasma loss is so great as to require plasma infusion to combat serious general effects.

There are further physiological matters of fundamental importance for the understanding of burns which are not properly appreciated. They are as follows:

1. The vascular dilatation which gives the redness, the heat, and part of the swelling in all painful inflammatory lesions is caused at first through what is called an axone reflex operating as indicated in the diagram, Figure 1. A sensory impulse interpreted as pain in the brain, branches to arterioles, capillaries, and arteriovenous connections in the adjacent tissue and dilatation results. Dilatation alone does not mean increased leakage through the walls of blood vessels until it has been pushed so far that stretching takes place. Wide dilatation and opening of all the vessels in a local area at once results in a maximum supply of oxygenated blood to the injured tissues. This widening of the vascular bed may last for a week or even more in infected lesions. Though initiated nervously, it is sustained by a variety of chemical agents formed in the burned tissue. In this connection it is well to refer to the shock-like state which is often thought to be due to the absorption of toxic substances from burns and from other severe wounds. These toxins absorbed from the lesions are considered responsible for lowered

blood volume by inducing capillary dilatation and some degree of abnormal leakage in the vessels of sound tissues. It may be the fact that something of the sort occurs, but as yet

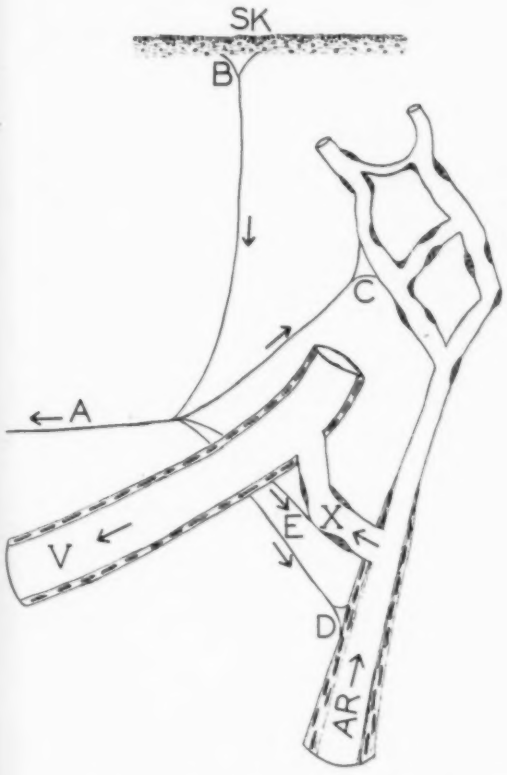

Figure 1. Diagram of the parts involved in the axone reflex which initiates the vascular dilatation in painful inflammatory lesions of which burns are prominent examples. A painful stimulus received at SK passes not only to the central nervous system to be recognized as pain, but to out-branching fibers to the smaller blood vessels which dilate as a result. SK, skin containing a pain ending; B, afferent nerve with A going to the spinal cord and branches, C, D, and E to a capillary, an arteriole, and an arteriovenous channel, X; V, a vein.

no one has detected such toxins in general distribution or even that capillaries in sound parts are abnormally affected after burns (Cope and Moore[3], 1944). One must, however, realize that even a very slight generalized increase in capillary permeability over the normal, especially if it continues for some time, might produce shock, particularly if added to a high degree of plasma loss by exudation in the actual burn. To my mind it is most satisfactory at the present time to consider that dilator and possibly permeability-increasing substances are formed in burns as an indispensable part of the inflammatory for the protection and healing of the local situation in which they are formed. If the burned area is very large, some degree of absorption may occur, enough perhaps to act systemically where the effects are disastrous.

2. Recently, Muus and Hardenbergh[4] (1944) have shown that the lymph from a severely burned leg of a calf or dog increases the oxygen use of liver and muscle slices and that the serum of the burned animals shows traces of the same effect, the weaker stimulation to metabolism being due to the high dilution caused by the large volume of the blood. This observation is again important in that it indicates the presence in the burn exudate of something which stimulates the metabolism in an area where repair must go on as rapidly as possible. It is thus the fact that in such regions of inflammation there is local provision for dilatation of blood vessels and maximum oxygen supply and at the same time the production of something which increases oxygen use. With this arrangement, favorable locally, there goes the possibility of the overflow of metabolism increasing substance into the circulation with unfavorable general effects. We have found it necessary to guard constantly against rises in body temperature in severely burned animals. This fever is in no way related to infection. It comes within a few hours following the burn, and death from hyperpyrexia may result in the first 12 to 18 hours. Following the Cocoanut Grove disaster in Boston, hyperpyrexia was observed in several fatal cases. The use of heat for treating shock-like states is strongly ingrained in the profession, and warning against it have been given for surgical shock. External heat has but one purpose: to raise the body temperature to normal. Anything more than this is unfavorable in the treatment of shock, and for the collapse following severe burns even greater care must be exercised since, as these patients improve and the general circulation becomes normal, they will be in a position to absorb substances from the burn which will cause increased body temperature without the assistance of added external heat.

3. I have made a point of the fact that coagulation of burn exudate through the tissues has a serious part in the production of swelling which complicates healing. There is no doubt that coagulation of the exudate in burned tissue does occur, but if the burn is unaccompanied by crashing and mutilation of the tissue, coagulation is slow. At first this is possibly due to the fact that the dead cells in the lesion are simply heat coagulated bits of protein and do not give off thromboplastic material until they begin to disintegrate as a result of digestion. In addition to

this situation there is a further interesting fact which begins to be evident in the lymph collected from burned tissues soon after the burn takes place. Normal lymph clots just as does blood, but we soon noticed that lymph, in reality the burn exudate, begins to show delay and inefficiency in clotting quite soon. It will clot if allowed to pool in the tissues, but there is so much delay in this that a great deal of the swelling one expects from a burn can be prevented by elevation which allows the exudate to flow away through the tissues and lymphatics. It may be thought that preventing the accumulation of masses of coagulum around a burn is dangerous on account of allowing toxic absorption, but I do not think this possibility is important enough to overbalance the advantage to healing which arises through preventing the accumulation of undue amounts of coagulated exudate and consider the interference with coagulation, resulting locally in burns, of advantage toward healing of the lesion.

4. *The extent of destruction and fatal injury to the tissues involved in a burn is always less than is thought of the case upon first examination.* No one causing burns under laboratory conditions can fail to be surprised at the recovery which results from injuries treated promptly and properly. This lesson shows at once how much damage may be done by extensive debridement which destroys cells that may recover from mild degrees of injury and exposes sound cells to mutilation from contact with the dressing. Too much emphasis cannot be laid upon the harm resulting from enthusiastic scrubbing and debridement. Dirt in such injuries, unless deposited on the surface after the burn, has usually been subjected to high heat, and no amount of cleansing can keep such injuries from contamination by skin organisms from adjacent areas.

THE TREATMENT OF BURNS

The management of serious injuries of the extremities by enclosing them in plaster of paris dressings was not new when Orr (1943), of Nebraska, began to advocate the method. It is, however, due to him and secondarily to the wide experience of Trueta[6] (1943) in the Spanish Revolution that we owe the great practical benefits which have resulted for the widespread war and civilian use of the method. Glenn, Gilbert, and I[7] (1943) examined the principles involved when the severely burned foot of a dog is encased in plaster immediately after burning. We dipped the foot of an anesthetized dog in hot or boiling water for precise periods, and at once immersed the part in liquid plaster of paris which hardened in a few minutes and confined the injury in a rigid, indistensible dressing. The plaster cast included the entire foot and extended an inch to an inch and a half on to sound tissue above the upper

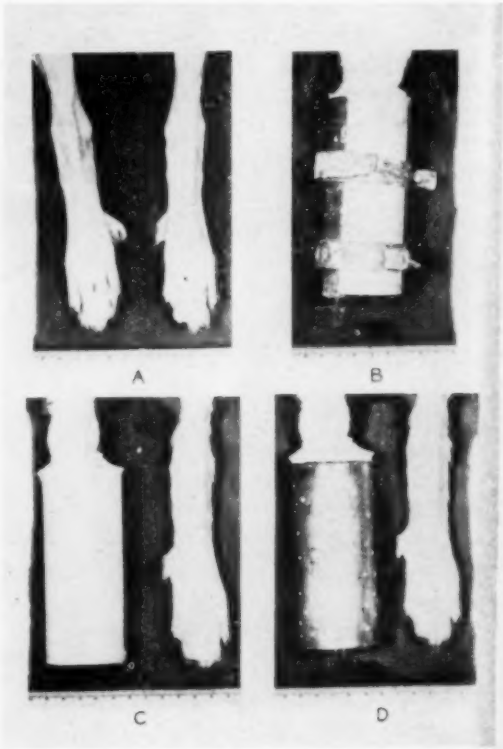

Figure 2. Application of a plaster cast to a burned paw.

A. Hind heel of an anesthetized dog, prior to burning. B. The right foot has been burned by immersion in hot water, and immediately after removal was thrust into a brass can containing liquid dental plaster. This can was in two halves, held tightly together by hose clamps. In the illustration, the plaster had hardened and one half of the can has been removed. C. The casted foot after removal of the can and ready for thorough drying by means of an electric fan. D. A perforated can to permit further evaporaton from the plaster has been cemented in place in order to protect the cast as the animal moves about, following recovery from anesthesia. (From: W. W. L. Glenn, H. H. Gilbert, and C. K. Drinker. Jour Clin. Investigation, 1943, 22, 613.)

margin of hot water immersion. Beneath the plaster we used at most one or two layers of lightly vaselined gauze, not enough to leave room for swelling. This technique had the advantage of actually holding the part at the precise normal size. It met the physiological requirements of our experiment perfectly, since the foot was absolutely immoble in the

rigid plaster and no matter what occurred, could not swell. Figure 2 shows the way in which casting of a burned foot was accomplished. The hind feet of a dog are shown in A. Immediately after burning the right foot by immersion in hot water, it was dried quickly, wrapped in a single layer of vaselined gauze or left uncovered, and then thrust into liquid plaster of paris in a brass container made in two parts and held together by hose clamps until the plaster solidified. In C the brass can has been removed and the plaster thoroughly dried. Then, in D, a second light can has been slipped over the casting and held in place with glue. This second can protects the plaster as the dog moves about. The manner in which this skin-tight method of applying plaster holds a foot so treated is shown in Figure 3. Both hind feet of a dog were burned by simultaneous immersion to the cross lines in water at 100 degrees C. for 30 seconds. The right foot was at once cast as shown in Figure 2. The left was not treated. After 24 hours the cast was removed from the right foot and the photograph made. The casted foot is quite normal in appearance, and the uncasted left foot greatly swollen, with blisters between the toes from which serum drips.

Figure 3

Figure 3. Both feet were burned for 30 seconds by simultaneous immersion in boiling water. The right foot was at once encased in plaster, and left untreated. Just before the photograph was made the cast on the right foot was removed. (Modified from: W. W. L. Glenn, H. H. Gilbert, and C. K. Drinker. Jour. Clin. Investigation, 1943, 22, 611.)

Figure 4

Figure 4. The upper left photograph is the hind foot of an anesthetized dog with a cross line to indicate the limit of burning. After immersion for 30 seconds in boiling water, it has been wrapped in one layer of gauze held lightly in place by gauze bandage and then covered with a plaster bandage extending well above the upper limit of the burn. The lower left photograph is the foot of another dog from which a similar plaster bandage has been removed 12 days after a 30 seconds' burn in boiling water. The final photograph shows recovery 86 days after this major injury.

Before discussing the extraordinary way in which these skin-tight casts meet the physiological reactions of these burns, it is best to make the situation more practical, and this is possible by examination of Figure 4. In this case a burn due to 30 seconds' immersion in boiling water has been treated

by an ordinary plaster bandage put on over a minimum amount of gauze covering. The left photograph of the lower pair shows the condition of such a foot on removal of the dressing 12 days after the burn, and the final illustration the same foot on the 86th day. Except for the fact that a small amount of hair is permanently destroyed, the foot is normal. There is no scar tissue; the epithelium is soft and smooth; there are no adhesions between the toes; and this recovery from a burn of major severity can be secured with mathematical regularity by simple closure in a plaster of paris dressing.

Why does the closed-plaster treatment work? I have devoted much time to examining the reasons why the closed-plaster treatment works so efficiently, since everything physicians have been taught runs counter to closing an infected or potentially infected part in a rigid dressing and then leaving it untouched for three weeks.

a. *The circulation.* Our first fear arises from a conviction that the close fitting, inelastic dressing will cut off the blood supply. I will not give the details of many different experiments, since all showed the circulation in an extremity cast in plaster or enclosed in the usual plaster bandage is unrestricted and wholly adequate. This will not be the case if the dressing is applied over a burn at the middle of an extremity and the lower part is not enclosed. It will swell promptly and can readily be made gangrenous if the dressing is left in place. There is but one course to take, namely the inclusion of the entire extremity in the dressing, and there can be no compromise with this.

b. *Edema and swelling.* I have said that abnormal leakage from the capillaries in a burned area is the major physiological derangement in the lesion. It requires very little thought to understand how plaster closure meets the problem of controlling capillary leakage. Unless the vessels are blocked by thrombi they will contain a current of blood when the plaster is applied. As soon as the dressing sets, it, in reality, becomes the wall of the capillaries, since even if they are highly permeable to water and solutes as a result of heat injury, the incompressible watery medium between the intravascular blood and the cast must bring about a situation in which, although the vessels are leaky, only minimal damage can occur. The restraint of seepage from seriously burned extremities will never be complete, and the plaster covering will always become stained with foul-smelling exudate, but the loss of plasma may be so much lessened by prompt application of plaster dressings as to reduce the seriousness of the burn in terms of the extent of surface affected. It thus happens that a treatment which fits the local problem of healing by checking undue swelling, also improves the general condition of the patient.

c. *Absorption.* The closed-plaster treatment does not prevent direct absorption by the blood vessels, and in any burned region the activity of the curculation is so great as to make absorption steadily possible. This is a factor which cannot be controlled specifically by any method of management. If one collects lymph from the burned foot of a dog which is not confined in plaster and from the opposite foot encased in plaster and is prevented from swelling, it is apparent at once that the flow of lymph from the swollen foot is many times greater than from that held to normal size. This is due to the fact that though coagulation of exudate through the tissues and lymphatics of the swollen foot may restrain lymph flow to a slight degree, it does not counteract the promotion of lymphatic absorption which accompanies the wide opening of lymphatics always present in swollen tissues. It is the general impression that lymphatics are pressed shut in the presence of swelling. The opposite is true. The walls of the smallest lymphatics are completely permeable to burn exudates, and are attached on their outer surfaces to surrounding tissue so that swelling pulls them open and the permeability of their walls results in easy filling for eventual delivery to regions outside the burn.

d. *Pain.* I have referred to the apparent absence of pain in our experimental animals. The same experience is most striking in human burns. Our expectation would be the contrary. We think of mysterious pressure effects against the plaster covering, which would be excessively painful. But it is apparent that in a very short time after application, pressures under the dressing become equal in all directions and there is no fluctuant stretching of the tissues. Pain in burns, after the first effects of the heat wear off, is due to stretching of fine nerve fibrils from swelling or to mutilation of them in applying new dressings. The part in a closed-plaster case cannot swell beyond the state in which it existed when the dressing was applied. It always shrinks somewhat, and one may readily observe that if an extremity put up in plaster is allowed to hang down a day or two after the original dressing, pain will

begin fairly promptly, and is relieved equally rapidly when the part is elevated and vascular turgescence removed. Another very real reason why the closed-plaster treatment saves the patient from pain resides in the fact that this dressing once in place is let alone for 21 days. It must contain no windows, and every impulse to open the dressing and ascertain the course of events must be resisted. If regional lymph nodes become inflamed and if fever and leucocytosis indicate an extending infection, it may be necessary to remove the cast; but these are not frequent complications, and in the ordinary case the plaster bandage may remain untouched for three weeks when its removal will not cause the slightest pain.

e. *Infection.* Experience has shown that local bacterial growth is, on the whole, less with closed treatment than when frequent dressings are used. At the outset the burned surfaces were dusted with one of the sulfa drugs, but the degree of absorption into the blood was unpredictable and the procedure was not continued. If medication by these drugs is thought necessary they are much better given in the usual way, since the increase capillary permeability in the burned area will mean thorough dosage where it is needed. Penicillin locally, because of its effect on staphylococci, has proved well worth while and should become in fairly wide use. There is little doubt that the complete degree of immobilization provided by the plaster dressing has part in the restraint of infection.

f. *Some special considerations.* In Figure 5 is shown a badly burned hand prior to treatment and after being enclosed in a plaster bandage. As a first covering one or two layers of dry gauze are now used. Grease of any kind has proved quite unnecessary to prevent sticking and may interfere with epithelialization. The fingers need not be wrapped separately. The dressing is applied so as to make a snug fit, but without pressure, the object being to hold the part at the volume existing when it is put in place, not to squeeze exudate out of it. Obviously the smaller the part when the dressing is applied the better. Consequently when a patient comes in for treatment the part should be elevated at once and kept so until the dressing is in place.

When our colleagues, Doctors Lund and Levenson at the Boston City Hospital, began to apply the methods and reasoning we had found satisfactory in our experiments upon dogs, it was believed the plaster bandage would not work well, since many patients could not be treated until some hours after the accident. It was found this was not the case. They were more comfortable at once and they were easily cared for if closed-plaster dressings were used immediately. So far as I can see, the complete immobilization and absence of meddlesome redressings had most to do with this.

The use of rigid plaster instead of the more popular pressure dressing is still a matter of careful observation. In putting on a pressure dressing, the part is covered with layer after layer of elastic and absorbent material of the general nature of sterile cotton waste, and is finally enclosed in bandage which makes a relatively indistensible outside coat. Between the bandage and the skin there is a variable amount of elastic packing which is bound on so that some degree of pressure exists. How much this is or how much it ought to be no one can tell. From the physiological point of view the technique does not possess the clear-cut advantage of the closed-plaster dressing, but being a physiologist with a good deal of clinical experience, I have learned that the physiological point of view may readily be wrong. Certainly the use of plaster of paris is largely limited to burns of the extremities, and for those

Figure 5. *Upper photograph,* appearance of hand before treatment. Note broken and unbroken blisters. Sooty appearance from electric flash. *Lower photograph,* after five days. Note medium position of fingers. Slight exudate stains the cast. (From: S. M. Levenson and C. C. Lund, Jour. A.M.A., 1943, 123, 273.)

about the genitalia, trunk, neck, and head the pressure bandage must be employed in the majority of cases.

In conclusion, I regret that time does not permit me to discuss the eminently physiological problem of plasma and whole blood transfusions, the pernicious damage which may be done by intemperate administration of salt and glucose solutions, and the anemia and protein malnutrition following burns. I have confined my remarks to a discussion of the physiological nature of an extremely common sort of injury, and of the profit to be gained by treating the injury as a physiological problem. In simple terms, this means nothing more than *really thinking about* the medical job which confronts us, and thoughtful sagacious attacks on all jobs are the master words today.

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Public Health Aspects of Infantile Paralysis*

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The epidemiological information on cases of infantile paralysis occurring in 1943 is not as complete as we should like to have. This is particularly true with respect to field investigations which would have included data on environmental sanitation. All field investigations which were made were carried out by individual county health officers and these were limited because of the shortage of personnel. The figures which are presented here were gathered for the most part from physicians' morbidity report cards supplemented by data from the Crippled Children's Commission on cases hospitalized but not reported. These records are fairly complete. Of the 594 known cases, 394 or 66 per cent were hospitalized, thus giving valuable statistical information of a clinical nature. We wish to recognize the splendid efforts on the part of our full-time county health officers in their assistance with the early recognition, diagnosis and isolation of cases.

*Presented to the Oklahoma State Medical Association, Tulsa, April 26, 1944.

DEFINITION

Infantile paralysis is an acute, generalized infection due to a filtrable virus, occurring both in epidemics and sporadically. From the standpoint of prevention, it is important to note that social and hygienic conditions apparently have no influence whatever in determining the infection. All classes are infected in about equal proportions.

HISTORICAL

Infantile parlysis has the ear-marks of a new infection, although some incidence of sudden paralysis in babies are found in the literature of antiquity. These might be assumed to be infantile paralysis.

The first outbreak described in the United States was reported by Caverly in 1894.

Wickman of Sweden, in 1905 and 1906, made the first systematic study of the disease from an epidemiological point of view. He directed special attention to several factors in the spread; namely, routes of travel, public gatherings of children, abortive and

ambulant cases, and healthy intermediate carriers.

In 1909, the disease was transmitted to two monkeys by inoculating them from the spinal cord of a child who had died of infantile paralysis. Later in the year, Flexner and Lewis obtained the same results in further transmissions from monkey to monkey through an indefinite number of passages.

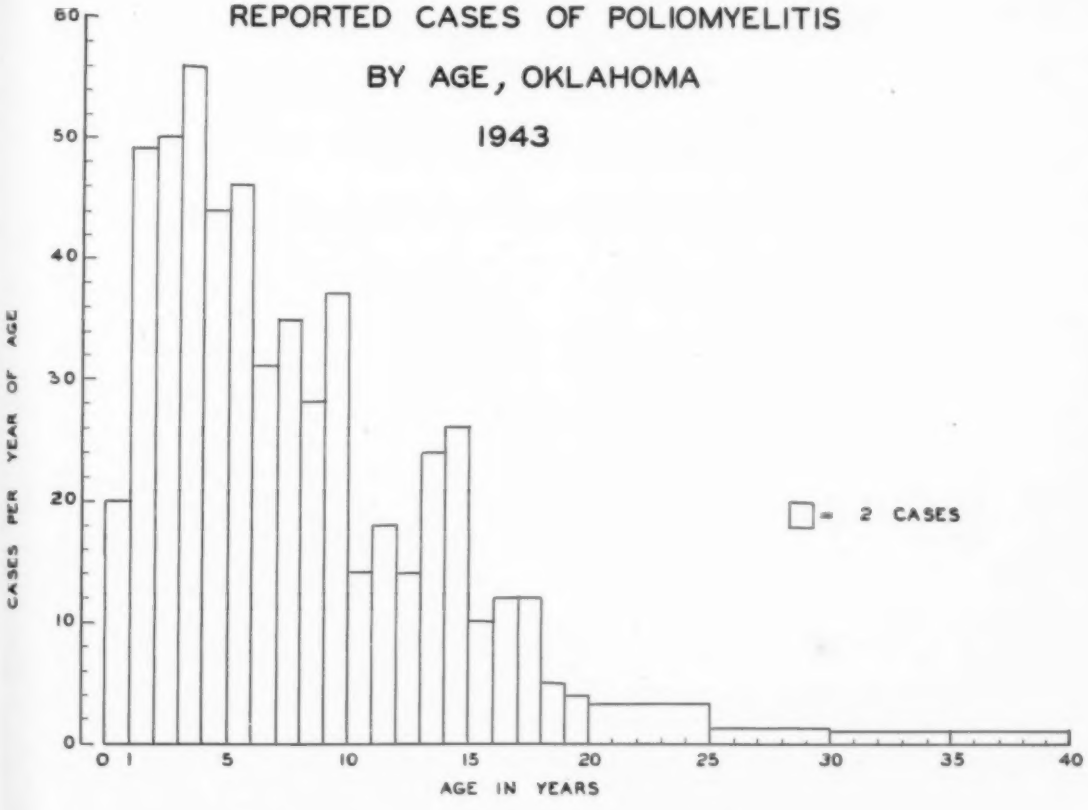
INCUBATION

The incubation period is commonly 7 to 14 days, with limits of 5 to 24 days. In making epidemiological studies, we consider happenings about two weeks prior to the onset of the disease.

The disease has gradually spread until it now exists in all countries of the world. The distribution, however, is quite unequal and irregular. From 1910 to 1914, inclusive, 18,800 cases were reported in the United States, and 31,500 cases were reported in the next two years. In 1916, an epidemic swept the United States involving numbers far in excess of anything recorded. There were 29,000 cases reported, and 6,000 deaths. This epidemic was the worst known in the history of the disease.

Cold countries having marked seasonal variations in temperature have been most affected. One of the many pecularities about infantile paralysis is that, while it

TABLE NO. 1



EPIDEMICS AND PREVALENCE

In the past, epidemics have been more severe in small towns and rural districts than in densely populated areas. However, there was an exception to this in the epidemic in 1916 which struck New York City with unusual force. But, in general, the incidence is lowest in metropolitan areas, and higher in small towns and villages of the country.

is a warm weather disease, it spares warm countries. A comparatively small number of cases have been reported from the tropics. The northern countries of Europe and the northern part of the United States have suffered most.

Infantile paralysis is strikingly a warm weather disease. It is true that during the winter, cases occur sporadically, but the

number increases as the summer advances. The curve rises in July and reaches its peak in August or early September, and declines rapidly with the advent of cold weather. This seasonal periodicity repeats itself with marked regularity in epidemic regions of temperate zones. A community having an epidemic one year is usually spared the next.

SEX AND AGE

Rosenau states that about 56 per cent of all cases reported are males, and about 44 per cent females. In the past epidemics in the State of Oklahoma, 58 per cent of all cases reported were males, and 42 per cent females.

Infantile paralysis is primarily a disease of childhood, probably because the young are more susceptible to the infection. In the past epidemic in Oklahoma, 38 per cent of all cases reported were under five years of age, and 69 per cent of all cases reported were under ten years of age.

Note Age-Grouping Chart. (Table No. 1.)

Any age may be affected, however. Probably the most outstanding among adult cases is our President who was 39 years old when he contracted the disease.

CASE FATALITY

From 1894 to 1921, studies of 38 epidemics. totalling 20,568 cases were made and the case fatality rate ranged from 30 per cent to 5 per cent. The disease appeared to be more virulent in winter than in spring and in summer. Thus, the case fatality rate was 86 per cent in March and 20 per cent in August in 1921. There is a possibility of inaccuracy in these figures, due to the lack of recognition and incomplete reporting of mild cases during the off-season.

In the 1943 epidemic in Oklahoma, the case fatality rate was 5 per cent. The case fatility rate is lowest from one to five years of age. It is high under one year, and becomes proportionately higher as age advances. (Table No. 2.)

SPREAD IN FAMILIES

The disease as a rule does not spread in families; only about 4 per cent of the over 8,000 families attacked in New York City in 1916 had more than one case per family.

However, in the 1943 Oklahoma epidemic, we had one family with five cases and five families with three cases each, and eighteen families with two cases each. It is significant that when multiple cases do occur in a family, they usually come down together or within a short time of each other. The instance of five cases in one family occurred in Texas county and the onsets ranged from August 30 to September 12, 1943.

TABLE II
POLIOMYELITIS CASES, DEATHS, AND CASE FATALITY BY AGE, OKLAHOMA, 1943

Ages	Cases	Deaths	Case Fatality Per cent
All Ages	594	33	5.6
Under 1	20	7	35.0
1—4	199	7	3.5
5—9	177	7	4.0
10—14	96	5	5.2
15—19	43	1	2.3
20—29	24	1	4.2
30—39	9	2	22.2
40 and over	7	3	42.9
Age unstated	19	0	0.0

THE VIRUS

The virus is present in greatest virulence and concentration in the spinal cord and also in the brain of an infected person or animal. It has been found in other organs and tissues, such as the mucous membrane of the nose and pharnyx. It has also been found in intestinal excretions.

Intestinal discharges should be disinfected in all cases until further knowledge of the source is at hand. It has been shown that ordinary chlorine treatment of sewage will not affect the virus. Trask has on numerous occasions detected the virus of poliomyelitis in urban sewage. It has not yet been possible to detect the virus in sewage during nonepidemic periods.

Infantile paralysis is not known to occur in nature in any other animal than man, although an animal reservoir is suspected. Only certain monkeys are susceptible. The old world monkeys have been found to be more suitable for experimental purposes. The disease in monkeys is a fairly accurate reproduction of infantile paralysis as seen in children. Monkeys have been infected by placing the virulent material upon the healthy mucous membrane of the nose, and by injecting the virus subcutaneously or into the peritoneal cavity. Also, by the introduction of the virus in the stomach. Lavan, in a talk in Oklahoma City last fall said that eight strains of the virus have been demonstrated.

IMMUNITY

One attack of infantile paralysis confers a high degree of immunity. Second attacks are almost unknown. Monkeys which have recovered from the infection show a high degree of immunity and their blood serum contains antibodies capable of rendering the virus harmless.

No racial immunity to the infection is known, although infantile paralysis has been for the most part confined to the white race. (No negro deaths, but 24 cases—4 per cent of total.) (Table No. 3.)

TABLE III
POLIOMYELITIS CASES BY SEX AND RACE
OKLAHOMA, 1943

Race	Total		Sex		
	No	Per Cent	Male	Female	Unstated
White	551	92.8	323	228	0
Negro	24	4.0	12	12	0
Indian	8	1.3	3	4	0
Unstated	11	1.9	1	2	8
TOTAL	594	100.0	339	247	8

MODES OF TRANSMISSION

(A) There is evidence to support the theory that the disease is directly transmissible from person to person. There is also a strong suspicion that healthy carriers play an important role in spreading the infection. There are epidemiological features of infantile paralysis that cannot be explained with the theory of contact infection; such as, the seasonal prevalence, rural incidence, lack of tendency to spread in families, and the disinclination to attack congested centers or to spread in hospitals, schools, or other crowded places.

(B) Insect-borne theory.

(C) Milk-borne theory.

(D) Other theories.

PREVENTION

No definite, effective system of prevention can be formulated until we are sure of the mode of transmission. We think that health authorities are entirely justified, in the meantime, in requiring cases to be reported, and isolated along the lines of preventive measures applied to typhoid fever; such as, disinfection, screening, guarding against insects, laying unnecessary dust, pasteurization of milk, closing of swimming pools, etc.

However, until we have something definite on the exact modes of transmission, all this resembles the old shot-gun prescription.

Both serums and vaccines have proved ineffective as prophylactic agents. Of course, no one can say that some kind of vaccine may not yet be realized.

Chemical phophylaxis will be of no definite value until the natural portal of entry is definitely known, and granting that it could be safely used.

Trask and Paul made the observation that infantile paralysis should be classed among the intestinal diseases rather than among the respiratory diseases. They further suggest that the principle of control may eventually turn out to be somewhat similar to those which have been used in typhoid fever. We are quite in the dark as to the control of any virus disease which is also an intestinal disease. And, in the control of poliomyelitis, our ignorance remains profound. Among other things, we still have to wait for more knowledge regarding the significance of insect vectors, and also regarding the existence of other possible extra-human carrier such as mammals or birds.

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The Significance of Abnormal Spinal Fluid Findings in the Diagnosis and Treatment of Neurosyphilis*

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Most Public Health Officers and others interested in the control of syphilis have very properly concerned themselves chiefly with clinical and epidemiologic aspects of the early stages of this disease. This policy is based upon sound principles. Syphilis, except when congenitally acquired, is usually transmitted by persons in whom the disease is in the primary or secondary stage. If these individuals can be found, brought to treatment and kept under treatment until cured—or at least until rendered noninfectious, the chain of infection will be quickly broken, thereby preventing many new infections.

The most important single factor in syphilis control has been the availability of adequate treatment facilities regardless of the patients' ability to pay. It has been necessary, therefore, to set up more than three

*Delivered before the Section on Public Health at the Annual State Meeting, April 26, 1944, in Tulsa.

thousand free and part-pay clinics all over the country to care for indigent persons and those with a small income. These clinics and physicians treating patients privately have been doing such a good job that, despite wartime conditions, there has been no measurable increase in the amount of syphilis in this Country, and the last official reported rate in the armed forces is the lowest in history.

When a physician accepts a patient for treatment, he accepts the responsibility of treating that patient to the best of his ability. If he contents himself with giving injections of mapharsen and bismuth until the patient has had twenty of each and then discharges him or lets him lapse treatment, he has probably fulfilled his public health duty to the community but perhaps not his private duty to the individual. If the patient develops symptoms of neurosyphilis or some late manifestation of the disease fifteen or twenty years later and thereby becomes a public charge, the physician becomes partly responsible for the eventual physical breakdown of this individual and the consequent prolonged and expensive custodial care which he may require for the remainder of his life.

For the proper treatment of a patient who has syphilis, it is mandatory at some time or other during the course of his treatment that his spinal fluid be examined. About 10 per cent of infected persons who have been entirely untreated can be expected, eventually, to develop neurologic manifestations of the disease. It is difficult to estimate the percentage of persons who have received routine therapy with arsenic and bismuth who will become symptomatic, but it is certainly an appreciable percentage, especially when there has been a treatment lapse in early syphilis early in the treatment regime.

If the spinal fluid is ever to become positive, it nearly always does so very early after the infection has become established and, therefore, the fluid should be examined early. In early syphilis, when a patient is being treated on a conservative schedule of one injection per week, the spinal fluid may well be examined after about six months of treatment. If the tests are negative, the examination should be repeated at the completion of treatment. If intensive treatment is used, the fluid may be examined when the treatment has been completed. If the spinal fluid is negative at the completion of intensive treatment or after six months of routine treatment, there is slight chance that it will ever be positive. If it is still negative a year later, the test need never be repeated.

When a patient is seen in whom the infection has occurred two or more years previously, a spinal fluid examination should be done at once in order to avoid wasting valuable time. If the test is negative, it will probably remain negative since immunity, if present, is usually well established after two years. If the test is positive, appropriate therapy should be instituted.

Until comparatively recently, very few registrants who had syphilis were accepted by the Selective Service Boards for induction into the armed forces. As was inevitable, this has all been changed and thousands of spinal fluid examinations are being made—many of them on persons who would otherwise never have received an examination of their spinal fluid. Many hitherto unsuspected cases of neurosyphilis are consequently being discovered. The finding of these cases present difficult problems to many a physician who has not had the training or the experience necessary to cope with it adequately. Very often he is not familiar with the significance of the various findings in the spinal fluid, and these findings are often misinterpreted. The practioner is perturbed when he discovers that the diagnosis and treatment of a symptomatic and clinical neurosyphilis fall short of being an exact science and that the problems which arise are often complex and confusing. He may be disappointed to find that the spinal fluid alone is not always a satisfactory guide to follow but that it is only an aid in the diagnosis and management of a patient with neurosyphilis. He discovers that false positive Wassermann tests are sometimes reported on spinal fluid specimens. He finds that laboratories vary widely in the types of tests which they perform and that they occasionally make conflicting reports. In short, all the familiar pitfalls found in the serologic diagnostic tests on blood are present and, in addition, there are many more occasioned by the greater complexity of spinal fluid tests and by the added gravity of that condition.

One should always remember that the sooner the presence of a syphilitic involvement of the nervous system is discovered, the more likely it is that that patient can be cured. This means that for best results the condition should be discovered during the fifteen to twenty-five years in which most neurosyphilis patients are asymptomatic. The earlier in this period the spinal fluid is found to be positive, the better.

Having concluded this somewhat lengthy preamble, it might be well to devote at least a paragraph or two to the subject under discussion, namely, "The Significance of Abnormal Spinal Fluid Findings in the Diagnosis and Treatment of Neurosyphilis."

There are, so far as we know, only three

changes in the spinal fluid that are of significance in the diagnosis of neurosyphilis. These are: the presence of reagin as manifested by a positive complement fixation or flocculation test, an increased number of cells, and changes in the spinal fluid protein.

Omitting the possibility of a false Wassermann test (which, incidentally, we shouldn't do), a positive complement fixation of flocculation test in the spinal fluid is pathognomonic of syphilitic involvement of the central nervous system. In fact, it is the only spinal fluid test that is pathognomonic. An abnormal cell count and an increased total protein or globulin content only indicate that meningeal irritation is present, and this may be caused by a variety of conditions. When the latter tests are positive in a person known to have syphilis, and when no other reason for them is apparent, a diagnosis of neurosyphilis should be made.

Eagle maintains that, for various technical reasons, precipitation tests on the spinal fluid are usually less satisfactory than an adequate complement fixation test. A quantitative test gives the maximum information. The titration should be carried downward as far as it will go. When a quantitative test has not been done, a fluid in which a 2 plus test has been obtained only in the first tube (E.G. containing 1 cc of fluid) is ordinarily reported as being "positive." The interpretation of this report may be much different from that made on a fluid reported as being strongly positive in four dilutions, that is, 4 4 4 4 0. Yet, without a quantitative test, the laboratory report on both tubes is identical.

Physicians are learning that a positive blood serologic test does not necessaarily indicate that a patient has syphilis. False positive Wassermann reactions due to laboratory error or to some property of the serum producing biologic false positive reactions are by no means uncommon. The performance of serologic tests on blood has improved tremendously during the past few years. This improvement has been due to a very great extent to the introduction of the annual serologic evaluation study of state laboratories by the U. S. Public Health Service and, in turn, to similar intrastate evaluations conducted by the State Health Departments on laboratories within the states. Unfortunately, it does not seem practicable at this time to do similar surveys with spinal fluid specimens. Many physicians have the impression that false positive reactions are rarely obtained in the spinal fluid. This is not true. The average physician sees the results of only one spinal fluid examination on a given patient, and he—and the patient—are likely to stand or fall on the result of this single test. No reputable syphilologist will begin syphilis therapy on a patient with only the evidence of a single positive blood test. The implications of a false diagnosis of syphilis are too great to render such a policy tolerable. Consider the far greater implications to the patient of a false diagnosis of neurosyphilis which was based upon a single positive spinal fluid Wassermann test. All too often such patients are branded erroneously with the diagnosis of neurosyphilis, and then begins a tedious, prolonged, dangerous, and very expensive treatment regime involving perhaps artificial fever, Swift Ellis, and tryparsamide therapy. I am not advocating repeating all spinal fluid examinations which are reported positive immediately, but when the patient presents no symptoms of neurosyphilis and the spinal fluid Wassermann is positive with a normal cell count and a normal protein or globulin content, the suspicion of a false test should be entertained. Another spinal fluid specimen can then be obtained and sent to another laboratory or to several laboratories. Surely the additional information obtained by a repeated examination in such doubtful cases is well worth the added inconvenience to the patient—especially when the fluid is found to be normal.

When the spinal fluid Wassermann is found to be positive and all other tests are negative, it is likely, though not always certain, that there is not much "activity" in the neurosyphilitic process. This picture is sometimes found after a patient has had fever treatment. After such therapy the cell count usually drops to normal first, then the Wassermann test becomes negative (perhaps several years later) and finally, in favorable cases, the total protein drops to normal; but this order is by no means invariable. One must also keep in mind the possibility that the spinal fluid may remain "Wassermann fast" in the same manner so frequently seen in the blood of many patients with late syphilis.

The cell count is a procedure which is all too often neglected in examinations on the spinal fluid. To be satisfactorily performed, this test must be done on absolutely fresh fluid since sedimentation, clumping and autolysis may invalidate the results of such a test within a few hours. The test is easily performed and requires only a microscope and a leucocyte blood counting pipette and a counting chamber. It is customary to consider a cell count of 5 cells or less as normal and 5 to 10 cells as of doubtful significance. If more than 10 cells per cu. mm. of spinal fluid are found, some type of meningeal irritation is indicated. The intensity of the meningeal irritation is indi-

cated by the number of cells present. In acute syphilitic meningitis, from 50 to 2,000 cells may be found. We may expect to find any number of cells up to 100 in late meningovascular syphilis and in tabes dorsalis, and up to 200 cells in general paresis. In a symptomatic neurosyphilis the cell count ranges from 0 to 200. A count of 150 or above presages the imminence of acute syphilitic meningitis and makes immediate intensive treatment mandatory.

Changes in the spinal fluid proteins are usually found when syphilis involves the central nervous system. The changes may consist of an increase in globulin, an increase in albumin, or an increase in varying ratios of both. A globulin increase can be determined by adding spinal fluid to an equal amount of saturated ammonia sulfate and grading the turbidity produced as one plus, two plus, three plus, and four plus. Normal spinal fluid contains too little globulin to be demonstrated by this test.

The well known Pandy test is not a test for globulin, but it is a test for total protein. In our experience the Pandy test has been somewhat disappointing. There is an increasing tendency to measure the amount of total protein present in the spinal fluid quantitatively. The total protein may be precipitated in a variety of ways and the amount of turbidity compared with standards in order to determine the number of mg. per cent of total protein. The amount present in normal fluid is generally considered to be from 15 to 40 mg. per cent though occasionally the content may be somewhat higher. This quantitative test is more informative than a qualitative test in much the same way that a quantitative Wasserman test is superior to a qualitative Wassermann in the diagnosis and management of neurosyphilis.

The best known collodial tests are the gold, mastic, and benzoin. They are all fundamentally similar. They are entirely nonspecific and their diagnostic value has been greatly exaggerated. The type of cure obtained probably depends upon the absolute and relative concentrations of albumin and globulin in the fluid. The total protein determinations therefore actually give us more factual information than do the colloidal tests.

The idea that colloidal test zone curves are helpful in distinguishing between paresis, tabes, unclassified neurosyphilis, and infectious meningitis is fallacious. If the fluid contains a large excess of globulin as compared to albumin, it will give a paretic curve; and conversely, if it contains both albumin and globulin in large concentration, it will give a meningitic curve. Any type of curve may appear in any type of central nervous system involvement, syphilitic or otherwise. It is truly illuminating to see, as we frequently do, three successive colloidal spinal fluid reports on the same patient six months apart, often from the same laboratory, indicating e. g. first a tabetic curve, second a meningitic curve, and finally a paretic curve. It would be truly weird to assume that such a patient had tabes first, then meningitis six months later, and finally paresis.

Unquestionably, one of the chief reasons for the popularity of the colloidal tests is that there is something exhilarating in a macabre sort of way in discovering that a patient has "numbers in his spinal fluid." It is more stimulating to see a report that says "colloidal mastic 5555543210" than one that says "total protein 75 mg. per cent." Undoubtedly, colloidal tests may be helpful to the physician in the evaluation of the status of the spinal fluid, but he should understand what a positive test means, and he should be cognizant of the limitations of the test. He should understand that, as is the case with an abnormally high cell count and an abnormally high protein content, a positive colloidal test indicates only meningeal irritation from some cause, not necessarily syphilis. He should consider the "zonal reactions" with suspicion, and he should remember that unless the degree of precipitaion exceeds two, the colloidal test should be considered normal. In other words, the colloidal curve 2222110000 is within normal limits.

A few general remarks on the treatment of asymptomatic neurosyphilis might not be amiss at this point. Routine treatment consisting of alternating courses of weekly injections of trivalent arsenic and bismuth for a total of forty to seventy injections usually is not adequate for the successful management of such a patient. When spinal fluid changes are minimal with a normal Wassermann test, usually a prolongation of six months to a year of the routine alternating courses of trivalent arsenic and bismuth will be adequate.

When moderate abnormalities are present in the spinal fluid including a positive Wasserman test, an intensified treatment routine should be used for at least six months to a year. The spinal fluid should be examined every six months. If the titre of the spinal fluid does not show signs of falling, fever or tryparsamide should be considered. In resistant cases fever should be used before treatment is stopped. The total duration of treatment in such patients will usually be two to two and one-half years.

When marked changes are present in the spinal fluid (paretic formula), routine treatment with trivalent arsenicals and bis-

muth is not sufficient to bring about a serologic reversal. Fever therapy is indicated on such patients, either as soon as the spinal fluid changes are discovered or as soon as is convenient for the patient. The total period of treatment for this type of patient should be at least three years.

Tryparsamide should never be used in any type of syphilis other than neurosyphilis, and it should never be used then unless adequate facilities for routine visual field examinations are available. Subdural therapy has been steadily losing ground, and we agree with Moore that its use should be entirely abandoned.

The fact that early treatment of asymptomatic neurosyphilis gives the best results cannot be overemphasized. After nerve tissue in the brain or spinal cord has been destroyed in patients with paresis and tabes dorsalis, little can be done with any type of therapy save possibly to prevent the process from advancing any further. Adequate therapy, including fever when indicated, long before actual neurologic damage has occurred is the proper prophylaxis against the development of asymptomatic neurosyphilis. It is indeed fortunate that the spinal fluid gives us a fairly accurate prophecy concerning what will happen perhaps years later. It is tragic that better use is not more frequently made of this device. The greater the extent of the spinal fluid abnormalities, the greater is the likelihood that, without proper treatment, paresis or tabes will be the eventual outcome.

It is hoped that this discussion may have been helpful in pointing out a few of the pitfalls that so frequently beset the practitioner in the management of patients who have syphilis. No apology is made for the fact that the methods of treatment of syphilis of the central nervous system have barely been touched. The routinized treatment schedules which are acceptable in early syphilis are impossible in neurosyphilis. Each patient requires individual treatment. As Moore says, "Success in therapy in this type of syphilis implies some things which no text can supply, namely, a basic knowledge of neurology, psychiatry and internal medicine, a working acquaintanceship with the art, as well as the science, of medicine, and experience. Lacking any one of these, the practitioner will secure better results with his patients if he carries out treatment procedures which have been advised for the particular individual patient by a consultant expert."

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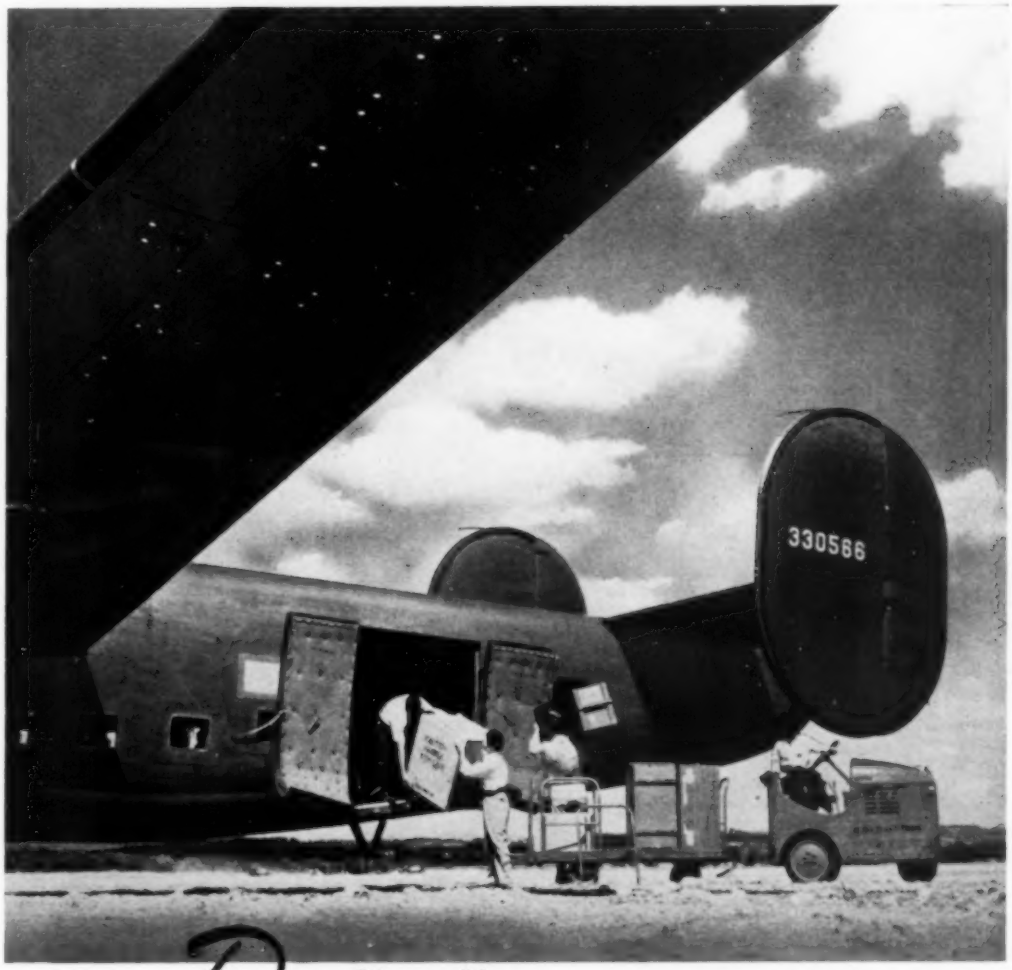
C. K. Countiss

President.



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EDITORIALS

SHAME ON OKLAHOMA

According to fairly accurate estimates, less than half the members of the Oklahoma State Medical Association receive the Journal of The American Medical Association.

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You may rest assured that the officers and the members of the Council are moving forward with the principles, purposes and the mandates of your House of Delegates. Are you doing what you can through your County Society, through your social and business contacts and through the care of your patients to put the profession of your State on the lasting pedestal of scientific accomplishments and laudable ambitions? Without your loyal cooperation, the work of your officers and the Council will be in vain. Wake up and make your own work your "master word."

BURNS

In this issue of the Journal appears Cecil K. Drinker's significant, logical discussion of experimental studies of burns and the clinical application of the principles established through the same.

On account of the War and increasing civilian hazards, this subject demands serious consideration by every doctor who may be called upon to treat burns. During the past two or three years medical literature has been loaded with articles on this subject. These reports and discussions, while revealing what may be accepted as a gradual accumulation of valuable knowledge, the careful reader has been disturbed by the want of uniformity; the absence of a dependable consensus of opinion by which the average doctor may be guided in the treatment of burns.

It is to be hoped that the work of Drinker and his associates may lead to a crystalization of principles and methods for the guidance of the physician with the greatest possible benefit to the patient. Every doctor who receives the Journal should read the Drinker article and all who anticipate the treatment of burns should re-read it with unction.

CHEMOTHERAPY IN TUBERCULOSIS

Internists with a special interest in diseases of the chest are being besieged by inquiries about Diasone, Promin and Promizole in the treatment of tuberculosis. No doubt the general practitioner has to meet the same inquiries.

For the information of those who have not had occasion to follow the progress of experimental work in this field and the clinical trial of certain chemical agents in the human being, it should be known that during the past year the American Trudeau Society (Medical Section of the National Tuberculosis Association) has had an active Committee on Therapy for the purpose of evaluating all therapeutic claims and advances in the treatment of pulmonary conditions.

The following report was published in the American Review of Tuberculosis, April, 1944:

"The Committee on Therapy of the American Trudeau Society (Medical Section of the National Tuberculosis Association), in session March 17 and 18, 1944, at Chicago and Waukegan, Illinois, has reviewed information so far made available to it on the effects of Promin, Diasone, Promizole, Diaminodiphenylsulfone and some related drugs upon previous established experimental tuberculosis in guinea pigs. It has also reviewed the very limited amount of roentgenological and clinical data from one institution so far made available regarding patients treated with one of the drugs, viz. Diasone. On the basis of these data the following statement has been authorized:

"Promin, Diasone, Promizole and certain related compounds appear to possess in varying degree the striking ability to restrain the development of experimental tuberculosis in guinea pigs offers many contrasts with clinical tuberculosis in human beings, even though the causative organism is the same.

"It is the opinion of the Committee that the clinical and roentgenological data so far made available to the Committee on the action of Diasone in human tuberculosis is as yet inadequate both quantitatively and qualitatively to permit, even tentatively, a positive evaluation of its curative effects upon tuberculosis in humans. The Committee believes that there is, at this time, no adequate basis for the optimistic implications of the magazine articles or of the releases to the press which are now so well known to both the profession and public. It is believed, on the contrary, that such implications are distinctly unwarranted and not in accord with the clinical evidence which has been reviewed by the Committee. The Committee regrets exceedingly that the magazine articles mentioned previously were published in spite of efforts on the part of both the Committee and the clinician quoted to stop their publication.

"Until controlled studies of adequate scope have been reported it is recommended that none of these drugs be used for treating tuberculosis patients except under conditions which will appreciably add to our knowledge of their clinical action, and in the presence of adequate facilities to protect patients effectively from their potentially serious toxic effects. Patients and physicians must also be reminded of the provisions of the federal regulations which prohibit the distribution of a drug in the experimental phase of development to other than reserve institutions to which the material is assigned by the manufacturer for either laboratory or clinical investigation. The Committee is informed that other clinical investigations are now in progress, and it is the expressed opinion of the Committee that such further controlled clinical investigation is distinctly desirable.

"Any use of chemotherapeutic agents, including Diasone, in the treatment of tuberculosis patients must, therefore, be regarded as purely a project in clinical investigation. It must be again emphasized that such use is not without hazard and that the roentgenological and clinical evidence reviewed by the Committee gives no justification at this time for any attitude concerning the value of these drugs in patients other than one of critical interest."

At the Annual Meeting of the National Tuberculosis Association and the American Trudeau Society in Chicago in May, this Committee presented a similar report. More recent studies and reports do not warrant any alterations in the above report.

The unfortunate publicity in lay periodicals has caused many people who are suffering from tuberculosis, to be unduly optimistic and their hopeful inquiries have brought a lot of trouble upon conscientious physicians. If premature babies were as virile as premature lay publicity, we could throw away our incubators.

The following paragraph is from a letter written by the Chairman of this Committee on July 20, 1944, in response to the author's inquiry about a newspaper story on sulfabenamide.

"The situation is just as you probably anticipated; namely that the newspapers are several jumps ahead of the investigators, and actually there is no evidence whatever that sulfabenamide is of benefit in pulmonary tuberculosis, nor has Doctor Gubner made any such claims directly or indirectly."

The following lines entitled "Fake Cures", written by a patient 28 years ago, serves as an example of what has been going on for many generations and expressive of the yearning for health and life always in the victim's heart. Let us hope for a genuine cure while we protect our patients from premature and false claims.

FAKE CURES

Some T. B.'s thought they had a cure
In Eckman's Alterative,—
    But they died.
Some others tried Tuberclecide
And thought it superlative,—
    And they died.

Some more poor dupes pinned all their faith
To the dope called Lung Germine,
Another bunch spent all their cash
For Virgin Oil of Pine,—
    Then they died.

Whittington's Specific is another fake cure name.
Oxomulsion is another and their results are just the same,—
    The suckers died.

Alpha Institute will cure (?) if you have the cash to pay,
The treatment is successful but the patients pass away,—
    They all died.

Miller's International is one that's somewhat new,
Lost forty-eight poor lungers of a possible sixty-two,—
    They just died.

Aicsol's another, made by a man named Lloyd,
And Nature's Creation is one more you must avoid,—
    Or you'll die.

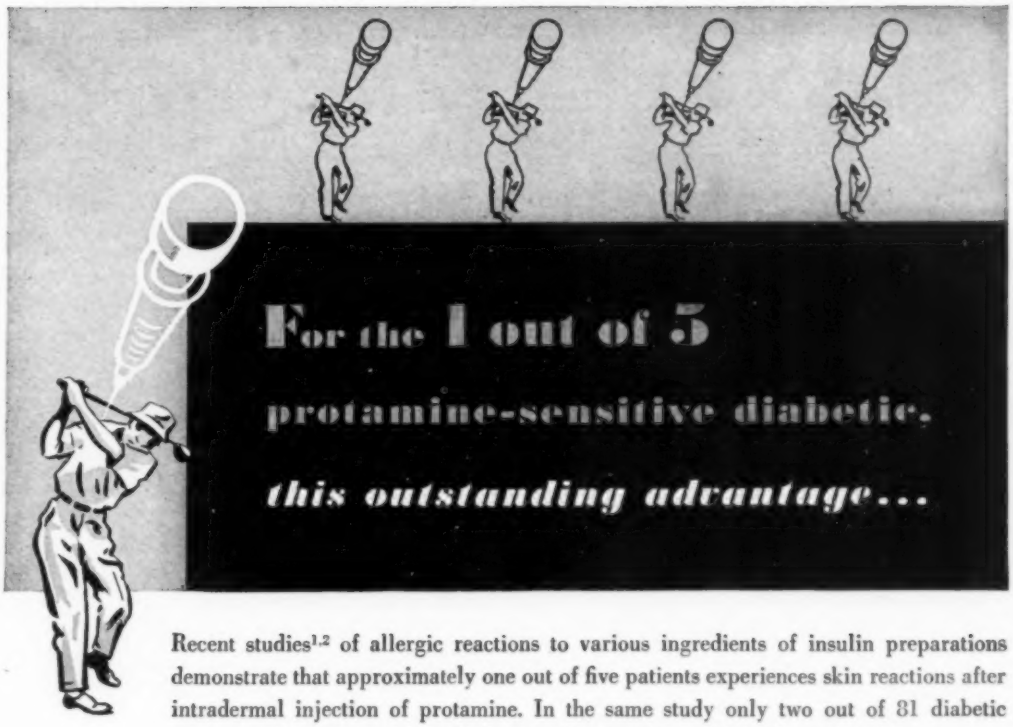
There's a man in Jackson, Mich., by the name of Lawrence Hill,
Who'll guarantee to cure you if you will foot the bill,—
    And then die.

There's Wilson's cure and Roger's cure, Pulmonol and Sanosin,
Hydrocine and Oleozone and one called Sartolin,
All guaranteed to cure you 'till you're broke and near all in,—
    Then you die.

If you think you have consumption, don't waste time on a quack,
For he'll take all your money and you'll get nothing back.
Just go to some good doctor, and if he says you're right,
Follow his instructions and make a good stiff fight.—
    And you'll live.
—E. E. Dunnigan, The Barlow Sanatorium, June 1, 1916.

What is Medical History?

This is the title of the third article in Sudhoff's "Skizzen" in the perusal of which the sincerely interested physician and surgeon will discover that he has entered a domain of science in which he may have thought he was hitherto quite well versed, to suddenly discover that he is passing through new territory with every step and has really not fully grasped what is meant under the term—medical history. It is not simply a record of medical events nor of the actions of eminent Aesclepiads nor of the discoveries of research workers. It is not a history of the revelation of other sciences bearing upon medicine. It is not a chronologic arrangement of years or dates in which important medical ideas originated or discoveries were made, it is not a record of various doctrines that were taught or of the different conceptions of anatomic, pathologic, physiologic, clinical, therapeutic and surgical endeavors that were conceived and executed. All these things, important though they are, constitute nothing but the material of Medical Historiography. As the surgeon would term it, it is the instrumentarium. What then is Medical History? It is the evolution and elucidation of the historic cultural and scientific developments, medical ideas, events, doctrines, etc., with regard to their inner connections. Medical history aims at a real understanding of the periods, their physicians and their manner of healing.—Master Minds in Medicine. John C. Hemmeter. Pages 14-15. New York Medical Life Press. 1927.



For the 1 out of 5

protamine-sensitive diabetic,

this outstanding advantage...

Recent studies[1,2] of allergic reactions to various ingredients of insulin preparations demonstrate that approximately one out of five patients experiences skin reactions after intradermal injection of protamine. In the same study only two out of 81 diabetic patients exhibited sensitivity following the intradermal injection of globin.

Bauman,[1-3] and Duncan,[4] as well as others, have reported that patients who suffered from severe skin reactions following the use of protamine zinc insulin obtained immediate relief upon changing to globin insulin with zinc.

WITH 'WELLCOME' GLOBIN INSULIN WITH ZINC, these other advantages:

A single injection daily of 'Wellcome' Globin Insulin with Zinc will control many moderately severe and severe cases of diabetes, helping to reconcile patients who resent more frequent injections. Timed to achieve morning onset of action and then maximum effectiveness during the afternoon, 'Wellcome' Globin Insulin with Zinc provides control during peak eating and working hours. Diminishing action after 16 hours allays the dread of "night shock".

'Wellcome' Globin Insulin with Zinc, a new advance in insulin therapy, is a clear solution permitting a more uniform dosage. It was developed in the Wellcome Research Laboratories, Tuckahoe, New York. U. S. Pat. No. 2,161,198. Available in vials of 10 cc., 30 units in 1 cc.

'Wellcome' Trademark Reg.

(1) Page, R. C., and Bauman, L.: J.A.M.A. 124:704 (March 11) 1944. • (2) Bauman, L.: Bull. N. E. Med. Cen. V:17-21 (Feb.) 1943. • (3) Bauman, L.: Am. J. Med. Sc. 198:473 (Oct.) 1939, ibid. 200:299, 1940. • (4) Duncan, G. G., Diseases of Metabolism, Phila., Saunders Co., 1942, p. 782.

'WELLCOME' GLOBIN INSULIN WITH ZINC

Literature on request

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ASSOCIATION ACTIVITIES

PREPAID MEDICAL AND SURGICAL PLAN GOES TO MEMBERS

The Prepaid Medical and Surgical Planning Committee met on July 9 preceding the Council Meeting. Most of the members were in attendance. It was decided to mail a revised plan to all members of the Association including those in the Armed Forces. A post card was to be included with the plan, for approval, disapproval or suggestions and criticisms.

The plans were carried out and approximately 300 replies have been received, a great majority of which are favorable to the Plan. Members inquired as to the inclusion of medical cases. The Committee has found that, in States where all services are included, the plans have not been successful and that it is best to start with those types of services which are mentioned in the printed plan and gradually extend the plan to include other types of services.

IT IS URGED THAT ALL MEMBERS RETURN THE POSTCARD IMMEDIATELY in order that the Committee will have the benefit of all suggestions before any final action is recommended to the Council and the House of Delegates.

ADVISORY COMMITTEE TO VOCATIONAL REHABILITATION DIVISION NAMED BY DR. ROUNTREE

As per action of the Council, Dr. C. R. Rountree, President, appointed the following Advisory Committee to the State Vocational Rehabilitation Division. In addition to these appointments there will be a dental representative appointed.

Clinton Gallaher, Shawnee, Chairman; Bert F. Keltz, Oklahoma City; James O. Asher, Clinton; Ennis M. Gullatt, Ada; and Harry D. Murdock, Tulsa. Mr. Bert Loy, Superintendent of Oklahoma City General Hospital was appointed on recommendation of the Oklahoma Hospital Association.

NEW STEPHENSON-TRAVERSE CLINIC OPENS IN ALVA

On Monday, June 19, patients were being received in the new Stephenson-Traverse Clinic in Alva. Dr. C. A. Traverse and Dr. I. F. Stephenson of Alva are to be complimented on this new addition to the medical facilities of the city.

Completely modern throughout, the tile brick building houses, besides the doctors' consultation and treatment rooms, an X-ray room, a laboratory, utility room, recovery rooms and a surgery room for minor operations. All rooms open off corridors and are heated and cooled by a single air-conditioning unit. A large, quietly-decorated reception room is at the front entrance of the building.

SPECIAL COURSE IN OTOLARYNGOLOGY ANNOUNCED

The University of Illinois College of Medicine announces that its fall didactic and clinical refresher course for specialists in otolaryngology will be held at the College from September 25 to 30 inclusive. The fee for the course is $50.00. Since registration is limited to twenty-five, applications should be filed as early as possible. Write for information to Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Ill.

CONGRESSMAN PAUL STEWART CONFERS AT EXECUTIVE OFFICE

Congressman Paul Stewart called at the Executive Office of the State Association on Tuesday, July 25, in regard to the legislation pending in Congress relative to the deferment of pre-medical students.

The War and Navy Departments and the Selective Service Board has issued regulations against the deferment of such students and the American Medical Association had their ruling appealed to the President who concurred. The officials of the A.M.A., the Oklahoma State Medical Association and Dean Tom Lowry of the Medical School have protested this ruling and have urged the Congressmen to support a bill which has been introduced in Congress providing for such deferment.

If pre-medical students are not deferred there will be a great shortage of doctors for both the Armed Forces and civilian needs by the year 1949. It is hoped that the doctors of the State will urge their Congressmen and Senators to support H.R. 5128, the details of which will be found in the Medicine at War page of this issue of the Journal.

REMODELING OF EXECTIVE OFFICES NEARING COMPLETION

The remodeling of the Council Room and Library of the Executive Offices in Oklahoma City is expected to be finished by the time this Journal reaches you. All members of the Association are invited to visit the offices when they are in Oklahoma City.

PAUL H. FESLER VISITS COUNTY SECRETARIES AND COUNCILORS

Mr. Paul H. Fesler, Executive Secretary of the State Association, has recently visited the Secretaries and Councilors in Choctaw, Bryan, Atoka, Pittsburg and Muskogee Counties.

Mr. Fesler has also surveyed the hospital facilities in McAlester and Muskogee in order to ascertain whether or not these hospitals could be utilized in connection with the training of men returning from the War. About one-half of the Oklahoma doctors in the service have indicated a desire for either internship, residency or postgraduate courses after the War.

MEETINGS OF COMMITTEES URGED

The Cancer, Prepaid Medical Plan, Public Policy and Public Health Committees have met since the Annual Meeting. It is hoped that all of the Committees will have meetings before the usual time of the Fall meetings of the local Medical Societies. The Societies will be kept informed so that these Committees may cooperate in matters affecting the entire Association.

NEW REQUIREMENTS OF AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC.

A number of changes in Board regulations and requirements were put into effect at the Board's last annual meeting. These were designed to aid civilians as well as candidates in the Service. Among these is the waiver, temporarily, of the AMA requirement for men in the Army or Navy, especially for those who proceeded directly or almost so from hospital services into Army or Navy Service, upon a statement of intention to join promptly upon return to civilian practice. At this meeting the Board decided also to accept a period of

FOR SOME WOMEN the climacteric is practically uneventful except for the cessation of menstrual function. To others the cessation of ovarian activity becomes a crisis to themselves and their families.

One of the valued contributions of endocrinology was the discovery and isolation of potent estrogens and their usefulness in alleviating the distressing symptoms of the menopause.

Within the last five years the natural estrogens have decreased in cost while orally administered diethylstilbestrol costing only one or two cents a day has brought estrogenic therapy within the reach of every woman.

The Squibb Laboratories supply the *natural* estrogens Amniotin, in a variety of dosage forms for use orally, intravaginally or by hypodermic injection. The present price of Amniotin in Oil in capsules is the lowest in history; for injection, Amniotin in Oil in the vial packages makes the cost per dose relatively inexpensive and enables the physician to vary the dosage to fit the patient's requirements.

Diethylstilbestrol Squibb is available in a like variety of dosage forms except that for oral administration it is supplied in tablets rather than capsules. Reports in the literature indicate that, where excessive dosage is avoided, many patients acquire a tolerance to the drug and are able to take it without discomfort.

For literature address the Professional Service Dept., 745 Fifth Ave., New York 22, N. Y.

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nine months as an academic year in satisfying our requirement for certain years of training. This is only for the duration and even men who are not eligible for military service but who are nevertheless in hospitals where the accelerated program is in effect have been allowed to submit to us this short-time period of training in lieu of our previous requirements.

Beginning with the next written examination, which is scheduled to be held the first Saturday afternoon in February, 1945, this Board will limit the written examination to a maximum period of three hours and in submitting case records at this time, all obstetrical reports which do not include measurements either by calipers and, as indicated, by acceptable x-ray pelvimetry, will be considered incomplete.

Prospective applicants or candidates in military service are urged to obtain from the Office of the Secretary a copy of the "Record of Professional Assignments for Prospective Applicants for Certification by Specialty Boards" which will be supplied upon request. This record was compiled by the Advisory Board for Medical Specialties and is approved by the Offices of the Surgeon-General, having been recommended to the Services in a circular letter, No. 76, from the War Department Army Service Record. These will enable prospective applicants and candidates to keep an accurate record of work done while in military service and should be submitted with the candidate's application, so that the Credentials Committee may have this information available in reviewing the application.

Applications and Bulletins of detailed information regarding the Board requirements will be sent upon request to the Secretary's Office, 1015 Highland Building, Pittsburg 6, Pennsylvania. Applications must be in the Office of the Secretary by November 15, 1944, ninety days in advance of the examination date. The time and place of the Spring 1945 (Part II) examination will be announced later.

Paul Titus, M.D., Secretary

• OBITUARIES •

W. T. Salmon, M.D.
1868-1944

Dr. William T. Salmon, Duncan, died on June 26 at his home. He had been in poor health for some time but had been seriously ill for only three weeks.

Dr. Salmon was born in Lynchburg, Tennessee. He graduated from the University of Tennessee and practiced in Cowan, Tennessee and Sherman, Texas before moving to Oklahoma City in 1898. After taking special work in New York in 1897, he confined his practice to eye, ear, nose and throat. In 1927 the family moved to Duncan where Dr. Salmon practiced until shortly before his death.

Dr. Salmon was past president of the Stephens County Medical Society and was active in medical legislation in Oklahoma during the early days of statehood.

Surviving are his wife, Mrs. W. T. Salmon, Duncan; a daughters, Miss Sue Salmon, Los Angeles; and two sisters, both of Nashville, Tennessee.

John R. Pollock, M.D.
1883-1944

Dr. John R. Pollock, Ardmore, died June 28 as a result of shock induced by the tragic drowning of his young granddaughter on June 27. Dr. Pollock was in ill health and was unable to sustain the impact of the tragedy of the child who fell into a lily pond at the Pollock residence.

Dr. Pollock graduated from the Chicago College of Medicine and Surgery in 1909 and shortly thereafter began practice in Ardmore where he carried on his profession many years. In the last few years he was handicapped by ill health. Dr. Pollock was a poineer member of the Ardmore Rotary Club and was active in Boy Scout

The Coyne Campbell Sanitarium, Inc.

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The macrocytic anemias in pregnancy respond to

Solution
LIVER EXTRACT
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MACROCYTIC ANEMIAS in pregnancy resemble other macrocytic anemias. This type of anemia frequently responds best to a complete antipernicious anemia regime, including the injection of liver extract, vitamin therapy, a diet adequate in protein, and iron by mouth when there is evidence of hypochromia.

REFINED SOLUTION LIVER EXTRACT *Lederle* is a potent preparation of the antianemia substance which, because of exceptional care and expense in preparation, causes a minimum of discomfort at the time of injection. Use of this liver extract may be expected to result in a prompt reticulocytosis, a progressive reversal of the abnormal erythrocyte picture, and simultaneous correction of symptoms.

PACKAGES:

REFINED SOLUTION LIVER EXTRACT
(1) 1-10 cc. vial (5 U.S.P. XII injectable units per cc.)
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(4) 3-3 cc. vials (10 U.S.P. XII injectable units each vial)

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(5) 3-1 cc. vials (15 U.S.P. XII units each)
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Penicillin-C.S.C.—available as penicillin calcium as well as penicillin sodium—is packaged only in rubber-stoppered serum-type vials containing 100,000 Oxford Units. The vials are used in preference to sealed ampuls because they make for greater convenience in storing the solution and because they lessen the danger of contamination after the solution is made.

Only vials of 100,000 units are offered at present because experience designates them as the most advantageous size. If there IS a factor in therapy which may undermine or lessen the remarkable therapeutic efficacy of penicillin, it may be underdosage. Even if therapy is instituted late in the course of the disease, penicillin in many instances will prove effective if adequately high dosage is used for the proper length of time.

In the conditions so far explored and reported, effective dosage in some instances will be less than 100,000 units per day; in many instances it may have to be several times this amount Hence in a large percentage of cases the Penicillin-C.S.C. vial of 100,000 units will prove most advantageous.

The convenience of the vial will be readily appreciated. After removal of the tear-off portion of the aluminum seal, sterilize the exposed surface of the rubber stopper

For the usual concentration (5000 Oxford Units per cc.) inject 20 cc. of physiologic salt solution into the vial in the usual aseptic procedure.

Invert the vial and syringe (with needle in vial), and withdraw the amount of penicillin solution required for the first injection.

Store vial with remainder of solution in refrigerator. Solution is ready for subsequent injections during the next 24 hours.

IS SUPPLIED ONLY IN 100,000 OXFORD UNIT VIALS

in the customary manner, inject into the vial 20 cc. of pyrogen-free, sterile physiologic salt solution; without removing the needle invert vial and withdraw as many cc. of this 5000 units per cc. solution for the injection that is to be made immediately; store the vial with its remaining solution in the refrigerator—it is ready for use when the next injection is to be made.

The concentration withdrawn from the vial is 5000 units per cc. If a lower concentration is desired, modification is easily accomplished.

If you have not as yet received a copy of the "Penicillin-C.S.C. Therapeutic Reference Table," showing dosages, modes of administration, and duration of treatment required in the various infections in which penicillin is indicated, write for a complimentary copy now. You will find it a valuable aid in familiarizing yourself with penicillin therapy.

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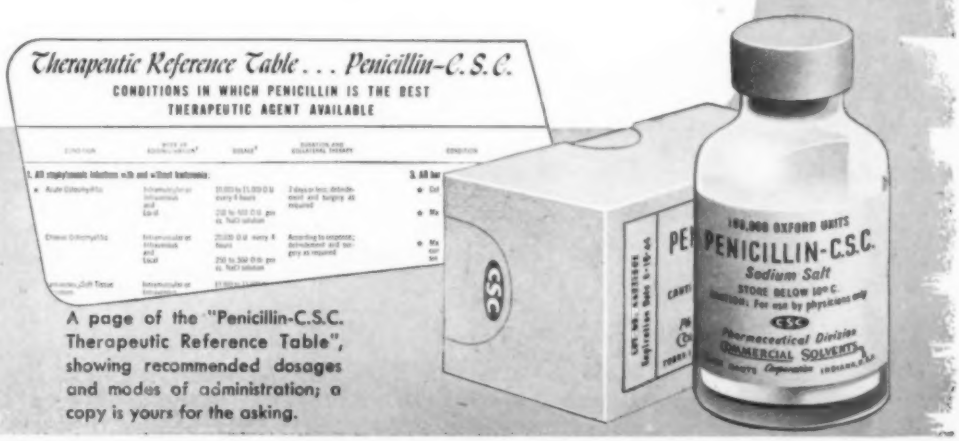


A page of the "Penicillin-C.S.C. Therapeutic Reference Table", showing recommended dosages and modes of administration; a copy is yours for the asking.

work. He was a member of the Carter County Medical Society, the Oklahoma State Medical Association and the American Medical Association.

Dr. Pollock is survived by his wife, Mrs. John R. Pollock and daughter Mrs. John Sullivan, both of Ardmore.

J. B. Gilbert, M.D.
1889-1944

Dr. J. B. Gilbert, Tulsa, died July 4 following a short illness. He had practiced medicine in Tulsa since 1909 when he moved there from Meridian, Mississippi. Dr. Gilbert became county physician in 1929 and served for a number of years in that office. He was a graduate of the University of Mississippi and Tulane University at New Orleans.

He was formerly on the staffi of the Morningside Hospital and at the time of his death was on the staff at Hillcrest Memorial Hospital and the assistant staff of St. John's. He was a member of the American College of Surgeons, the State and County Medical Associations and the American Medical Association.

Surviving Dr. Gilbert are his wife, Mrs. Edna Gilbert; one son, Dr. J. B. Gilbert, Crippled Children's hospital in Oklahoma City; three sisters and three brothers.

Resolution

WHEREAS, Death has removed from our society its honorary member and most distinguished member in the person of Dr. G. P. Cherry of Mangum, and

WHEREAS, His personal and professional life was always an inspiration to the other members of the society, and

WHEREAS, His high conception of his professional duty to both his patients and to his fellow practitioners, was ever a source of pride to the members of this society, and

WHEREAS, Every member of the Greer County County Medical Society feels a personal loss in his going, but feel that his advice and council, his upright gentlemanly conduct and devotion to duty, has left us a heritage of which we can be proud to emulate.

THEREFORE BE IT RESOLVED, That this testimonial of love and high esteem of his colleagues of the Society be made a record in the minutes of the Society, and that copies of this resolution be given to his family, the local press and the Journal of the Oklahoma State Medical Association.

J. B. Hollis, M.D., Secretary
Greer County Medical Society

Classified Advertisements

FOR SALE: One Flouroscope, in excellent condition. Price right. From office of Dr. J. K. Lee, Tulsa, now in service. If interested please contact M. R. Cowen, Ritz Building, Tulsa 3, Oklahoma.

FOR SALE: Portable oxygen equipment; ediphone; Westinghouse X-Ray Machine. Address Key 51, care of Oklahoma State Medical Journal, 210 Plaza Court, Oklahoma City 3, Oklahoma.

FOR SALE: Twenty bed hospital, brick and concrete, modern, partly equipped. Would be desirable location for good internal medicine man and surgeon. Reply Key 50, care of Oklahoma State Medical Journal. 210 Plaza Court, Oklahoma City 3, Oklahoma.

FOR SALE: Instruments and office equipment for eye, ear, nose and throat practice. For full information write: Mrs. W. T. Salmon, Duncan, Oklahoma.

News From The State Health Department

Dental Caries in Oklahoma

Selective Service data has revealed that dental condition of selectees from the Southwest is much better than the national average. This corroborates findings of public health studies made in the school populations of Oklahoma. One of these studies consisted in dental inspections of children in the 12-13 and 14 year age group, and was reported in "Public Health Bulletin" No. 226.

The dental caries attack rate was computed by combining these factors, namely: decayed permanent teeth; extracted (because of caries) permanent teeth; filled permanent teeth.

Some typical rates in Oklahoma per 100 children are as follows:

County	Caries Attack Rate
Comanche	199.2
Grady	152.3
Muskogee	258.3
Oklahoma	224.1
Tulsa	275.5

Contrasting these relatively low rates are some selected at random from the same bulletin. These rates are again for 100 children in the 12, 13, and 14 year age groups:

Town or County	Caries Attack Rate
Lake County, Indiana	513.5
Davenport, Iowa	657.5
South Portland, Maine	970.0
Queen Annes County, Maryland	649.0
Milwaukee, Wisconsin	917.0

These are significant differences which are not yet fully explained. Suggested explanations have been variations in climate, dietary habits, racial susceptibility, and water supplies.

The most promising of these possibilities for purposes of mass control is that of water. A definite correlation exists between dental caries rates and the type of water consumed. One of the first studies to establish this correlation was a dental survey made in the schools of Quincy and Galesburg, Illinois, some eight years ago In this study variables other than the community water supplies were, to all practical purposes, neutralized. The caries attack rate per 100 children in Galesburg was 201, whereas in Quincy the rate was 633. Similarly controlled surveys in other areas have had like results. Just what element or combination of elements in water has the inhibitory effect has not been determined. Fluorine seems to be one constant in water associated with low caries rates. However, fluorine bearing waters are usually heavily mineralized and the dental effect of these minerals should be considered. The pH of water is another factor which is deserving of close scrutiny.

Until the inhibitory factor in water is clearly established, control through this medium is obviously by pure chance, and whether water is exclusively responsible for low state-wide caries rates is also difficult of proof. However, the fact remains that dental caries, although a problem of major proportions here, does not have so heavy an impact on the child population as in many other sections of the country.

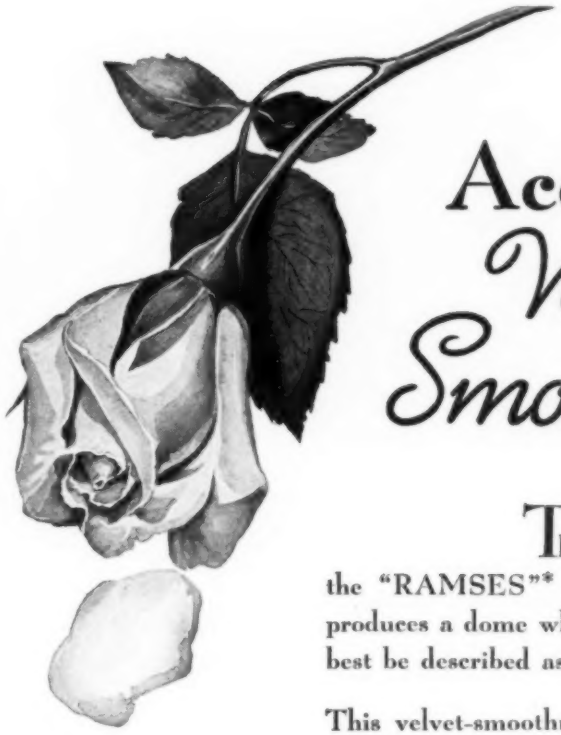
Oklahoma State Health Department

IMPORTANT

The following letter was received from the Federal Security Agency of the U. S. Public Health Service, Washington, D. C.

June 30, 1944

Dr. G. F. Mathews
State Health Commissioner
Oklahoma City, Oklahoma.
Dear Dr. Mathews:



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The process used in manufacturing the "RAMSES"* Flexible Cushioned Diaphragm produces a dome which is soft and pliable and can best be described as being as smooth as velvet.

This velvet-smoothness lessens the possibility of irritation during use.

The "RAMSES" Flexible Cushioned Diaphragm is manufactured in sizes of 50 to 95 millimeters in gradations of 5 millimeters. It is available on the order or prescription of the physician through any recognized pharmacy.

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A MARK OF *Ramses* DEPENDABILITY

This is to advise that the program for the relocation of physicians and dentists under Public Law 216 which became operative December 23, 1943, has been terminated by Congress, effective June 30, 1944. It will therefore be impossible to arrange any further relocations under the benefits of this program.

For those communities in your state which have contributed their share of relocation expense and for which physicians or dentists have been contracted, the arrangement will be carried out according to the terms of the contract, from funds obligated for this purpose.

Those communities which have submitted their checks for $300.00 and for which it has been impossible as yet to locate a physician or dentist, will have their monies refunded promptly.

We deeply appreciate your cooperation and assistance in this program which, in the short time it has been in operation, has effected the relocation of a number of physicians and dentists in needy areas.

Sincerely yours,
(signed) L. H. THOMPSON
Assistant Surgeon General

SUMMER-TIME HEALTH

Summertime can be dangerous to the health, or it can be a time to store up extra vitality for winter, the Bureau of Publicity of the Indiana State Medical Association said in a recent bulletin.

"Food can be a dangerpoint for infection," the bulletin states. "Its source should be carefully watched. Grade A milk is a necessity. Vegetables should be fresh —preferably right from the garden—thoroughly washed, and kept cool. Bread, particularly whole wheat, should be kept in the refrigerator.

"Pies with cream fillings, cream puffs, eclairs, ham and hollandaise sauce are particularly susceptible to the staphylococcus germ which causes severe cases of food poisoning, and should be kept thoroughly chilled.

"Sunbathing should be taken in moderation, so should swimming. Swimmers should not go into the water right after meals or when completely exhausted. They should keep the nose free from water when it is submerged to avoid ear, nose and throat infections, and should not remain in the water too long, as thorough chilling of the body has the same effect in summer as in the winter.

"Flies and mosquitoes and other insects should be kept out of the house by strong screens, and quick exterminators are necessary. Breeding places of mosquitoes should be destroyed. Bird baths and pools should be drained and cleaned frequently. Water in which flowers stand in the house can be a breeding place too, and should be changed every day.

"Light, loose clothing without belts, tight armholes or tight sleeves lets the air reach the skin, allows ease of motion and makes one cooler," the bulletin continued. "Labor-saving devices are worth more in summer than at any other season. The wise housewife gets up early in the morning, uses her electric washer, her ironer, her vacum cleaner, her pressure cooker when the day is cool, finishes her work and is not pursued by chores all day long. She will do well to prepare her meals in the cool early morning hours too.

"Much heat will be kept out if houses are kept closed and darkened during the day. Fans should be placed on the floor to do the most good. Frequent showers, with cold water if you like, are recommended.

BOOK REVIEWS

TROPICAL NURSING. A. L. Gregg, M.A., M.D., M.Ch., B.A.O. (Dublin) D.T.M. & H. (London) L.M. (Rotunda Hospital). Member of Associate Staff of, and Lecturer to Nurses at the Hospital for Tropical Diseases, London, Lecturer on Tropical Diseases, Westminister Hospital Medical School. Philosophical Library, Inc., 15 E. 40th Street, New York, N. Y. 185 pages. 1944.

This text-book is the second edition of this timely topic. Timely, because tropical diseases are becoming increasingly important, due to the war which has taken our American soldiers and other personnel into the tropical areas, with the inevitable exposure to and acquisition of certain tropical diseases.

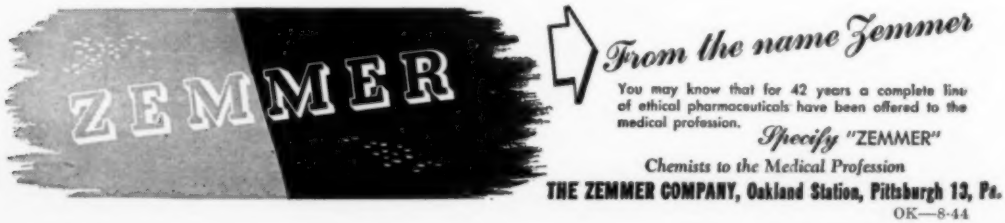
The book is divided into five sections—Personal Hygiene in the Tropics; Tropical diseases; Techniques; Care of the Eyes; and a Glossary.

Stress is given to the principal variants in relation to personal hygiene, such as the climate, the food, and the living conditions, because the body's adjustment to the climatic conditions depends upon adjusted habits of life. In the discussion of each disease the essential points on the causative agents, clinical condition, clinical course of the disease, complications, prophylaxis, medica and surgical treatment are emphasized. Each subject is given position and space in proportion to its relative importance, the malarias, dysenteries, and filiaries receive the most attention. Other diseases of an infectious nature which are discussed are: typhus, yellow, undulant, dengue, blackwater, relapsing, and sandfly fevers; the bubonic, pneumonic, and septicemia forms of plague; cholera, leprosy, yaws, bubo, rabies and sprue. Tropical skin infections and ulcers caused by mites or fungus. Two noncommunicable diseases, beri-beri and pellagra, are included. Space is given to heat exhaustion, sunstroke; snake, scorpion and spider bites.

The section on the care of the eyes is most interesting. Stress is placed on the protection of the eyes from glare, burns, and insects. The common eye diseases are: styes, conjunctivitis, corneal ulcers, glaucomia, and epidemic ophthalmia. A small amount of space is given to nursing technique which are quite in keeping with our present general and communicable disease nursing care. The same may be said of the medications and treatments prescribed.

The public health and sociological aspects of tropical diseases are not discussed. However, mention is made of the importance of screening, the use of mosquito netting, avoidance of uncooked foods, and the purification of water for drinking and bathing purposes.

This text-book should be in the library of every graduate nurse. It should be of special value to the nurses in government services who are now or expect to have a tour of duty in the tropics. They should be fortified with the information contained therein. The book is of small dimensions, measuring 7 x 5 x 1, which makes it ideal to pack in a nurse's kit for ready reference.—Golda B. Slief, A. B., R. N., Medical Social Service, Oklahoma County Health Association, Inc., Variety Club Health Center, Oklahoma City.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MEDICINE AT WAR

TIME NOW TO PROTEST AGAINST GOVERNMENT'S THREAT TO MEDICAL EDUCATION

Journal Says Present Policies of the Armed Forces and Selective Service Will Result in an Annual Deficit of 2,000 Doctors

Declaring that medical educators and the medical profession of the country refuse to accept the responsibility for the acute shortage of medical care which will threaten this country within a few years if current regulations and policies persist, The Journal of the A.M.A. for July 8 points out that the present situation will result in an annual and cumulative deficit of 2,000 physicians a year in face of new and increased demands for medical service. It advises the medical profession that now is the time to protest to the House and Senate Military Affairs Committees against this blind disregard for medical care in the future. The Journal says:

"In January 1944 it seemed that civilian and military needs for doctors would be met reasonably satisfactory by the arrangement in which the 55 per cent of entering medical school classes would be provided by the Army Specialized Training Program, 25 per cent by the Navy V-12 Program and 20 per cent from civilian sources. In the past six months this program has rapidly deteriorated. Today medical educators and the medical profession of the country refuse to accept the responsibilty for the acute shortage of medical care which will threaten this country within a few years if current regulations and policies persist. The responsibility must rest with the armed forces, the Selective Service System, the President and the Congress of the United States.

"In February the Army drastically curtailed the Army Specialized Training Program and has since renegotiated its contracts with medical schools to provide 28 per cent of the 1945 entering classes instead of 55 per cent, increasing to 47 per cent the numbers medical schools must obtain from civilian sources.

"In April the Selective Service System abolished all further occupational deferments of premedical and medical students not enrolled in medical schools by July 1, 1944. As a consequence, it was estimated that the entering classes of 1945 would be reduced 25 to 30 per cent.

"The threat to medical care entailed in these policies was pointed out to General Hershey, the Secretaries of War and the Navy, the President and others with the suggestions that the situation be met by (a) reinstitution of the inactive reserves by the Army and Navy, which functioned well for a year, and/or (b) an appropriate Selective Service adjustment, which was definitely a second best arrangement.

"The Army and Navy rejected the first alternative as an evasion of the Selective Service law, and the Selective Service System rejected the alternate proposal because of the acute need of the Army for young men. The needs for medical care were considered to be subordinate to the needs of the fighting forces.

"Alarmed at these developments, the House of Delegates of the American Medical Association, on the recommendation of the Council on Medical Education and Hospitals of the American Medical Association, passed the following resolution at its opening session, June 12:

"WHEREAS, The present policy of the Army and the Selective Service System in preventing the enrollment of a sufficient number of qualified medical students will inevitably result in an overall shortage of qualified physicians, with imminent danger to the health and well being of our citizens; therefore be it

"RESOLVED, That it is imperative that immediate action be taken by the President or the Congress of the United States to correct the current drastic regulations, which result in a restriction of the number of students qualified to enter the courses of medical instruction in approved medical schools.

"This resolution was sent to the President, the Secretaries of War and the Navy, the Selective Service System and all members of the House and Senate Military Affairs committees.

"The latest measure still further jeopardizing medical education and medical care was the passage of the Army appropriation bill by Congress June 21. This bill includes the following provision:

"Provided that no appropriation contained in this Act shall be available for any expense incident to education of persons in medicine (including veterinary) or dentistry if any expense on account of this education in such subjects was not being defrayed out of appropriations for the military establishment for the fiscal year 1944 prior to June 7, 1944. . . .

"This provision would seem to eliminate from 1946 entering medical classes the 28 per cent of places contracted for by the Army. Even if the Navy increases its quota from 25 per cent to 31 per cent, schools will be obliged to obtain 69 per cent of their students from women and physically disqualified males. Nothing even approaching this number of qualified civilian students is available. Classes will probably be half filled in the country at large.

"Should an adjustment not be made to correct the present alarming situation, a tremendous reduction of graduates after the war will ensue. Although schools will continue the accelerated program, they will admit classes only once annually instead of every nine months. This of itself will reduce the number of graduates from the present annual average of 7,000 to 5,000. If classes can be only half filled, this number will be reduced to 2,500 graduates per year. Since 3,300 to 3,500 physicians die each year, there will result an annual and cumulative deficit of 2,000 doctors a year.

"Still further reductions in graduates and permanent damage to the 'plant' of medical education will result from some schools being forced to close their doors because of drastically curtailed enrollments. An unknown number of war casualties among medical officers will also reduce the supply of physicians.

"These reductions in medical graduates will occur in the face of new and increased demands for medical services, mainly from the civilian population, the standing army and navy, the Veterans Administration and the liberated countries of Europe.

"Full support should be forthcoming from the medical profession for the Miller bill (H.R. 5128), with modifications, which reads:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 5 of the Selective Training and Service Act of 1940, as amende dby inserting at the end thereof a new subsection reading as follows:

"'(n) There shall be deferred from training and service under this Act in the land and naval forces of the United States, as necessary to the maintenance of the national health, safety, and interest, in each calendar year not less than six thousand medical students and not less than four thousand dental students. As used in this subsection the term 'medical or dental student' means (1) a person who is enrolled in, and who is pursuing a course of instruction prescribed for the degree of doctor of medicine at an accredited medical col-

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lege; and a person who is enrolled in, and who is pursuing a course of instruction prescribed for the degree of doctor of dentistry at an accredited dental college; or (2) a person who is pursuing a regular course of instruction at an accredited college or university (satisfactory completion of which will make such person eligible for enrolment in an accredited medical or dental college) with the bona fide intention of entering an accredited medical or dental college and pursuing and completing the course of instruction prescribed for the degree of doctor of medicine or for the degree of doctor of dentistry.''

''Protests against the blind disregard for medical care in the future should be addressed to the Senate (Senator Robert R. Reynolds, Chairman) and House (Representative Andrey J. May, Chairman) Committees on Military Affairs, the Senate Committee on Education and Labor (Senator Elbert D. Thomas, Chairman) and the House Committee on Education (Representative Graham A. Barden, Chairman). Every state medical society, medical school and scientific society should express itself in no uncertain terms on these developments.

The Forum

Notice to First Aid Workers and Others in the Immediate Handling of Burned Patients

It is high time that a warning is sounded against indiscriminate removal of burned clothing from a burned patient until he is removed to a hospital or to an environment where he can be attended under aseptic precautions. The clothing must not be removed if we are to accept and practice the teachings of authorities, such as the Surgeon General's Staff; that all burned areas must be considered and treated as an open wound. When some well-meaning layman tears or cuts off the burned clothing and exposes the area to contamination, it may mean the sacrifice of the victum's life. To smear on a lot of contaminated greases and oils only adds to the danger.

Do not remove any clothing. If any burned areas are exposed, cover with dry gauze if available. If not available use clean sheets or towels over the burned areas. Whether the face is burned or not the burned person should be masked during transportation and during aseptic care of the burn. As soon as the fire of the clothing is out, place the victim on a clean sheet, if available without disturbing any garment, wrap the sheet about him and if necessary in inclement weather, use blankets on top of the sheets. When he arrives at the hospital he is treated for shock. As soon as this is sufficiently controlled, he is removed to an operating room. The attendants are gowned, masked and gloved and under sterile precautions all burned clothing is then removed. The burned areas should then be very gently cleansed with sterile mild soap and water using every precaution as in any surgical operation.

It is not the object of this article to give details. This is written as an appeal to First Aid Workers in Industry, Red Cross Members and other laymen against the improper handling of the victims before they are seen by a surgeon. Do not destroy what may be the victim's only chance for recovery.

—A. Ray Wiley, M.D.

It is true that Society itself is an effect, but the great personality can neither produce nor prevent this effect. It can only modify it and give direction to it after it has been brought into existence. It is perfectly hopeless to contrast Society and the great individual as antagonistic agents. In fact this way of looking upon their mutual relations has already produced a great deal of harm. They mutually interact with and interpenetrate each other and each is incomplete without the other.—Master Minds in Medicine. John C. Hemmeter. Page vii. New York Medical Life Press. 1927.

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Medical School Notes

Dr. L. Everard Napier, Director of the Calcutta (India) School of Tropical Medicine, under the John and Mary R. Markle Foundation to the National Research Council, recently visited the School of Medicine. On July 7 Dr. Napier gave a general lecture on "The Tropical Diseases of India" and on July 8 he lectured on "Plague."

Other lectures will be delivered from time to time under the auspices of the National Research Council in co-operation with the Department of Preventive Medicine and Public Health. Announcement of such lectures will be made well in advance and a cordial invitation is extended to all those interested particularly to the Visiting and House Staff of hospitals.

Miss Elizabeth Hall, Instructor in Bacteriology, has resigned her position effective July 1 to do graduate work at the University of Washington, Seattle.

Dr. G. N. Barry, Medical Director of the hospitals, attended a postgraduate course in Cardiology in Boston during the month of July.

Seventy-two candidates took the Basic Science Examinations held at the Medical School on July 3. It is understood that the results will be available in August.

The Oklahoma State Dental Board also held its examinations at the school the latter part of June.

Dr. Charles Allen Winter has recently joined the Faculty of the School of Medicine as Assistant Professor of Physiology. Dr. Winter received the A. B. degree from Southwestern College, Winfield, Kansas, in 1926, attended the Johns Hopkins University, and was granted the Ph .D. Degree from the University of Buffalo in 1935. Prior to his coming to Oklahoma, Dr. Winter was on the Faculty of the University of Iowa. He is a member of the American Association of University Professors, the American Association for the Advancement of Science, the Society for Experimental Biology and Medicine, the American Physiological Society, and Sigma XI.

Dr. Noble F. Wynn, Instructor in Pharmacology, has recently resigned his position with the medical school to enter the United States Navy.

The Kiwanis Club was recently entertained with an Open House at the Crippled Children's Hospital. Mr. Jim Griffin, Secretary of the Club, presented to the School for Crippled Children a beautiful twelve volume set of Encyclopedia Britannica Junior. This set of books is a decided addition to the School Library and is a source of information and joy to the young patients confined to the hospital.

The following Residents of the University and Crippled Children's Hospitals have completed their contracts with these institutions:

Dr. J. D. Ashley, Jr., Resident in Medicine; Dr. Willard C. McClure, Resident in Eye, Ear, Nose and Throat, and Dr. John B. Jarrott, Resident in Orthopedics, all of whom have entered the United States Army and have reported to Carlisle Barracks, Pennsylvania. Dr. Paul B. Rice, Resident in Surgery, is now doing private practive in Corpus Christi. Dr. J. Paul Shively, Resident in Obstetrics and Gynecology, is now connected with the Chicago Lying-In Hospital.

Two interns have reported for duty from the University of Texas School of Medicine, namely; Dr. Robert Lee Mathis and Dr. Henry K. May.

Dr. John F. Hackler, Professor of Preventive Medicine and Public Health, returned July 1 from New York where, for a period of eight weeks, he participated in the teaching at the De Lamar Institute, Columbia University College of Physicians and Surgeons and observed the teaching of courses at the medical schools of Cornell, New York University and Long Island College.

Dr. Hackler's visit was made possible through a grant from the Commonwealth Fund which, with the State Health Department, has assisted the Oklahoma State Medical Association in a rather extensive program of post-graduate medical education.

The Library has now added the following journals to its subscription list: American Review of Soviet Medicine; Annals of Allergy; Digest of Treatment; Industrial Medicine; Journal of Neurosurgery; Quarterly Review of Medicine.

New books from the summer book order are being received. The following are available at the present time: Association for Research in Nervous and Mental Disease—Pain, 1943: Modern Management of Colitis—Bargen, 1943: Human Constitution in Clinical Medicine—Draper, Dupertuis and Caughey, 1944: Medical Radiographic Technic—General Electric X-Ray Corporation, 1943: Office Endocrinology—Greenblatt, 1944: Facts for Childless Couples — Hamblin, 1942: Pathology and Therapy of Rheumatic Fever—Lichtwitz, 1944: Geriatric Medicine—Stieglitz, 1943: Fractures and Joint Injuries, Third Edition—Watson, Jones, 1943: Clinical Lectures on the Gallbladder and Bile Ducts—Weiss, 1944.

Miss J. Marie Melgaard, Director, Dietary Department of the University Hospital, has been selected as one of three candidates representing the hospital field for the Nominating Committee of the American Dietic Association for 1944-1945.

"Care and Food Service Equipment" has been published by the Burgess Publishing Company, Minneapolis, and reviewed in The Journal of the American Dietetic Association, Vol. 20, No. 7, Page 472, July-August, 1944. This paper was prepared by a Committee of the Administration Section of the American Dietetic Association of which Miss Melgaard is Chairman. The review states, "As to the form in which it is presented, it is outstanding as an example of organization and condensation which might well be emulated by others attempting to present similar material for publication."

According to Miss Melgaard, three student dietitians were admitted to the University Hospitals for a year of training beginning July 1, namely; Frances Gentile of Mount Mary College; Marjory McCollom of Kansas State College; and Elizabeth Wall of the Louisiana State University.

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★ FIGHTIN' TALK ★

The following have been called to active duty: LT. (jg) NOBLE FRANKLIN WYNN, Oklahoma City; LT. JOHN HOWARD BAKER, JR., Eufaula; LT. CHARLES S. NEER, Vinita; LT. JAMES GARTRELLE PHILLIPS, Oklahoma City.

The following have been promoted recently from lieutenant to captain: RICHARD HUFFMAN GRAHAM, Oklahoma City; CHESTER RANDALL SEBA, Oklahoma City; JOHN ENGENE HIGHLAND, Oklahoma City; CLAUDE WILLIAMS, Anadarko; John GEORGE MATT, Tulsa: From captain to major; E. B. LEY, Perry.

As will be noted in the above list of promotions, the Executive Secretary (on leave of absence) of the Oklahoma State Medical Association, DICK GRAHAM, is now a Captain. Dick is stationed in Washington at the Surgeon General's office.

The office recently received a picture of the young heir of the Graham's and it was the unanimous opinion that he is 'quite a boy.' Mrs. Graham and Richard, Jr., are with Dick in Washington.

The Evacuation Hospital in Italy, to which CAPTAIN WILLIAM R. TURNBOW, Tulsa, is attached, has been commended for its heroic work on the Anzio beachhead by General Mark Clark. Captain Turnbow is an anesthetist on the staff of the hospital, which was under daily artillery fire for over ten weeks at Anzio. The Hospital was activated at Fort Sam Houston, Texas in April, 1942 and went overseas a year later. It was stationed at Bizerte before going to Italy.

Oklahoma Doctor Awarded D. S. C.

CAPTAIN DONOVAN TOOL, Edmond, with the Fifth Army at Salerno, has been awarded the Distinquished Service Cross with the following citation:

"Charles D. Tool, Captain, Medical Corps, United States Army. For extraordinary heroism in action, on March 18, 1944, in the vicinity of Cassino, Italy. An urgent call for aid was received from a battery that was suffering many casualties during a heavy enemy counter-battery barrage. Captain Tool drove his ambulance into a position in the midst of the shelling in order to attend to the wounded. After treating some of the more seriously wounded who had been moved to a stone culvert for protection, he made his way through flying shell fragments to care for men in a gun pit where many hits were being sustained. Finding a survivor who was seriously wounded, he immediately set to work to save him, oblivious to the crash of incoming rounds. Fragments from a shell bursting nearby struck Captain Tool and pierced his spine. Captain Tool calmly continued working to save the wounded men and only when certain that all casualties had received treatment did he allow his own wound to be dressed. By his courageous performance under fire, Captain Tool saved the lives of eleven men. His fearless calm gave comfort to the wounded and contributed to the high morale of the troops under fire. Entered military service from Edmond, Oklahoma."

(Signed) Mark W. Clark
Lt. General, U. S. Army
Commanding.

Captain Tool was born in Edmond, Oklahoma and received his pre-medic work at East Central. After graduation from the University of Oklahoma School of Medicine and his internship, he returned, in 1932, to Edmond to take up his practice. At the time he enlisted, in 1942, he was serving on the staff of the University of Oklahoma School of Medicine.

After training at Carlisle Barracks, he was sent to Africa in February, 1943. He was placed in a division of one of the first troops to set foot on European soil at Salerno.

Captain Tool is now at Boshnell General Hospital in Birgham City, Utah, where he was flown from Charleston, S. C. after his ship docked there. He will be in the United States for at least a year to recover from the wounds he received at the battle front.

LT. STANLEY DRENNAN, Oklahoma City, has just returned from two years service in the South Pacific. Lt. Drennan's wife, Lt. Aloha Drennan, an army nurse, left for duty in the South Pacific just eight days after Lt. Drennan's arrival in the States.

Lt. Drennan has not fully recovered from a siege of malaria and is now stationed in Memphis, Tennessee, after spending some time with his parents in Oklahoma City.

He was based on several islands during his overseas service and the LST of which he was "both junior and senior medical officer" made 26 beachhead landings on Jap-held islands.

During one of the trips, Lt. Drennan was informed that a private, who had walked twelve miles through the jungle in severe pain, was having an acute attack of appendicitis. Having no adequate equipment at hand, Lt. Drennan, using a table in the washroom, operated. He states that bent spoons were used to hold back the muscle tissue. "I knew instantly that what I had been so long in life preparing for was now at hand," said Lt. Drennan.

CAPTAIN WELDON A. MURPHY, Mangum, has returned to the States after seven months in India. While in India, after a crash landing, Captain Murphy became lost from his command and spent 11 days dodging Japs in the jungles, living on weeds and herbs.

CAPTAIN L. C. McGEE, Newkirk, has recently been transferred from Chungking, China, to another point in China.

Lawton Physician Missing in Action

CAPTAIN WOODROW L. PICKHARDT, Lawton, paratrooper medical officer, has been reported missing in action in France since June 7. No further word has been received from the War Department.

Captain Pickhardt, raised in Seminole, attended the University of Oklahoma School of Medicine, graduating in 1917. He then served a two year internship at the University Hospital and one year at Lying-In Hospital in Chicago. He had served two years as director of the Creek County Health Department when he entered the armed forces August 11, 1942. In September 1942, he was transferred from San Antonio, Texas to Fort Sill. In January, 1943, he was sent to Ann Arbor, Michigan, for a special school, then in April was ordered to Trinidad in the Caribbean Area. Captain Pickhardt returned in November and volunteered for paratroop service, being sent to Fort Benning. He received his wings there on January 7, 1944, and was sent to England.

COMDR. RAYMOND G. JACOBS, Enid, returned from the South Pacific in March and is now at Mayo Clinic, Rochester, taking a three month course in plastic surgery.

MAJOR HERVEY A. FOESTER, Oklahoma City, now serving in England, writes that he has been recently elected a Fellow of the Royal Society of Medicine. The Society, has, as its patron, H.M. the King, and is located at 1, Wimpole St., London, England.

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When Parke, Davis & Co. began the commercial production of Penicillin in the summer of 1943, the world-wide output of this precious material was almost negligible. Today Penicillin has become a standard therapeutic agent—supplied in quantities needed for the Allied armed forces and for use in research and treatment of selected cases, and now increasingly available for use in civilian practice.

Parke-Davis Penicillin is packaged in rubber-diaphragm-capped vials containing 100,000 Oxford units. Instructions for clinical use of Penicillin are available upon request.

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LT. COLONEL ONIS G. HAZEL, Oklahoma City, has recently been promoted from Major. Col. Hazel is Chief of Preventive Medicine and Consultant in Skin Diseases in the Office of the Surgeon, Headquarters Third Air Force, Tampa, Florida.

LT. WEBBER MERRELL, Oklahoma City, is reported critically ill in an English Hospital as a result of injuries received on D-Day.

While a resident of Guthrie, Lt. Merrell made his home with Lt. Col. and Mrs. Louis H. Ritzhaupt. He was graduated from the University of Oklahoma School of Medicine and interned at Wesley Hospital in Oklahoma City before he received his commission. He was stationed at Camp Gruber before going overseas in April of this year.

The following word has been received from CAPTAIN JOHN F. DALY, Pawhuska:

"After three and a half years duty with the medical service of the 45th Division, we'd reached the Anzio Beachead in Italy. One morning I absorbed a load of scrap metal from a German bomb and since then I've been learning at first hand about the quality of army medical care. A month's stay in Naples and another in North Africa was followed by a splendid trip home on a hospital ship, landing in Charleston, S. C. I was soon transferred to the hospital at Framingham, Mass., where I'm awaiting various repairs."

MAJOR R. E. ROBERTS, Stillwater, recently reported that he had operated on his first German prisoner who was a 23-year old boy who had lived just outside of Berlin. Major Roberts states that the prisoner did more than his share of the groaning when shell fragments were removed from his chest. The shell fragments are being saved by Major Roberts to bring home to his two sons who live in Stillwater.

LT. COL. S. E. STRADER, Oklahoma City, is home for a rest after several months in the South Pacific. Col. Strader was called to duty in June, 1942, having served in France during the last war.

Col. Strader, in his statement to the Daily Oklahoman, lauded the performance of the American troops, the C-47 cargo ships and the Mitchell B-25 bomber. Following are excerps of his statement.

"It was surprising how quickly the Americans became expert jungle fighters, meeting the Japs on their own terms. Fighting in New Guinea isn't anything like trench or moble warfare. You are sniped at continually. You can't see your enemy. It's rough and tumble fighting, with knives, bayonets and whatever you've got in your hand, or even your bare hands if you're caught off guard.

"The average temperature, day and night, is 93 degrees, and the humidity is awful. But in spite of that heat, there are snow covered mountains there. I almost froze flying over them once.

"We couldn't have gotten anywhere without the C-47. And those kids who are flying them are doing a grand job moving our supplies in and out. Those pilots don't give a hoot, they just get in there and fly 'em, rain or shine.

"Those ships (B-25) get shot to pieces, but believe me they are tops. I recall one job they did that played havoc with a Jap air base. There were four strips for the takeoffs and landings. Our Liberators went in with P-38 escort and took out two of the strips. That done, the bombers and fighters high-tailed for home, leaving the Japs free to use the other strips and take off in pursuit. And they did that. Off in the haze, however, our Mitchells were waiting, and when those 95 Jap Zeros came back from the chase, they got the surprise of their lives. After all the Zeros had landed the Mitchells sailed over and not only knocked out the remaining strips, but blew all the Zeros to kingdom come. It was a great show."

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The insult of anesthesia, tissue manipulation, unavoidable trauma, and enforced starvation sharply raise the nutritional requirements of the postoperative patient. Hence feeding must be started as early as possible to prevent too great a nutritional imbalance. Also, recovery is hastened and strength is gained more quickly when postoperative metabolic needs are supplied adequately.

Usually tolerated as early as liquids are retained, Ovaltine as a beverage provides a simple yet highly effective means of improving the nutritional state of the postsurgical patient. Its essential nutrients, well balanced and generously supplied, are in easily assimilated form. Thus the digestive burden is materially reduced. The delicious taste of this food drink proves appealing to all patients, young and old, making Ovaltine acceptable when many other foods are refused.

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CARBOHYDRATE	30.0 Gm.	62.43 Gm.	VITAMIN D	405 I.U.	480 I.U.
FAT	2.8 Gm.	29.34 Gm.	THIAMINE	.9 mg.	1.296 mg.
CALCIUM	.25 Gm.	1.104 Gm.	RIBOFLAVIN	.25 mg.	1.278 mg.
PHOSPHORUS	.25 Gm.	.903 Gm.	NIACIN	3.0 mg.	5.0 mg.
IRON	10.5 mg.	11.94 mg.	COPPER	.5 mg.	.5 mg.

*Each serving made with 8 oz. of milk; based on average reported values for milk.

MEDICAL ABSTRACTS

"A NEW AID IN REMOVAL OF FOREIGN BODIES OF THE CORNEA." D. F. Gillette. Archives of Ophthalmology. Vol . 31, pages 129-133. February. 1944.

The author describes a new method of removal of foreign bodies from the superficial epithelium of the cornea. It is applicable to all foreign particles but especially to foreign bodies with an iron content encountered in industry. Most ophthalmologists demand that the foreign body, burn and stain be carefully and completely removed as soon after the injury as possible. A minority, however, prefer to leave the stain of rusty iron particle, and at times even the foreign body and burn, to slough out rather than risk the added trauma of removal. This sloughing out requires a variable length of time and usually results in infection, with painful and disabling complications. The method described anticipates the localized softening of the epithelium and aids in the immediate, safe and complete removal of the foreign body, burn and stain.

A one per cent solution of silver nitrate is topically applied to the foreign body and the surrounding epithelium by a small thread of cotton spun on the sharpened end of a round wooden toothpick. The silver nitrate produces a reaction which is a faint gray swelling of the superficial epithelium. This swelling elevates the foreign body slightly above the level of the surrounding epithelium.

Experimental investigation of the author proved to be so successful that he applied the method to clinical cases with very good results. The patient was tilted back in a dressing chair, which supported his head in a firm position. The injured eye was carefully anesthetized, and then inspected with a binocular loupe. The slit lamp was used to locate the minute foreign particles that could not be satisfactorily seen with the loupe. The conjunctival sac was irrigated with 5 or 6 drops of a mild solution of mercury oxycyanate. The one per cent solution of silver nitrate was then applied to the foreign body. The reaction which developed in one minute was sufficient. Removal of the foreign body was then attempted with a sterile, pointed wooden applicator, tightly wound with cotton. The author also used the sharpened end of a round toothpick. This method aided the complete removal of the foreign body, burn and stain when the patient was treated soon after the injury. When, however, the stain did not come away readily, the point of the cystotome was used gently to lift it out. When the patient was seen later, the foreign body and burn were easily removed, but the stain, having further penetrated the tissues, was not always dislodged with the applicator.

In such cases the point of the cystotome was used carefully to free and lift out the stain. The use of the cystotome is better than that of the curet or of the dental burr. Injury to Bowman's membrane was avoided, and if this membrane was injured, the silver nitrate procedure was not used, for it allowed the solution to spread into the deep interspaces and produce unwanted stain.

Sulfathiazole ointment, 5 per cent, was immediately instilled after the removal of the foreign body and stain. When possible the eye was protected with a sterile eye patch, held in space with a Scotch tape. The patient was instructed to instill some of the ointment if the eye became uncomfortable. The use of sulfathiazole powder and ointment gave also good results in cases of corneal ulcers. The use of tincture of iodine for corneal ulcers was discounted by the author. Sulfathiazole was used also in cases with signs of infection, in combination with the use of hot compresses and instillation of a weal solution of mercury oxycyanate at regular intervals.—M. D. H., M.D.

"FRESH FRACTURES OF THE CARPAL SCAPHOID." Benjamin Obletz. Surg. Gyn. & Obst., LXXVIII, 83. January. 1944.

This report is based on a study of forty-five consecutive fractures of the carpal scaphoid in an infantry training camp. During the same period, only ten typical Colles's fractures occurred. This was explained by the fact that the jarring impact of injury did not hyperextend the wrist, because it was rightly fixed by the soldier's strong forearm muscles. This impact cracked the scaphoid bone at its mechanically weak point, the waist.

In an anatomical study, 13 per cent of the carpal scaphoids had no arterial foramina proximal to the waist. On the basis of the variations in blood supply, the forty-five fractured scaphoids were divided into two groups: Type I, fractures without interruption of blood supply to either fragment: Type II, fractures with interruptions of the blood supply to the proximal fragment. Thirty-seven cases fell into Type I and eight into Type II. This classification was made possible by serial roentgenograms taken three to four weeks apart. In Type II cases, the roentgenograms at the end of three or four weeks showed generalized decalcification in all of the bones except the proximal fragment of the fractured schaphoid. At sixteen to twenty weeks, the densities of the two fragments seemed to blend and the fracture line was obliterated. In the early weeks, the proximal fragment retained its normal calcium, because of a temporary avascularity, which should not be confused with aseptic necrosis, as the latter would appear in the roentgenogram as an irregular mottled density with partial collapse. The clinical importance of this differentiation is to maintain immobilization long enough to allow revascularization of the proximal fragment. In the Type I cases, eight and three-tenths weeks was the average time required for healing, as opposed to 19 weeks for Type I fractures.—E. D. M., M.D.

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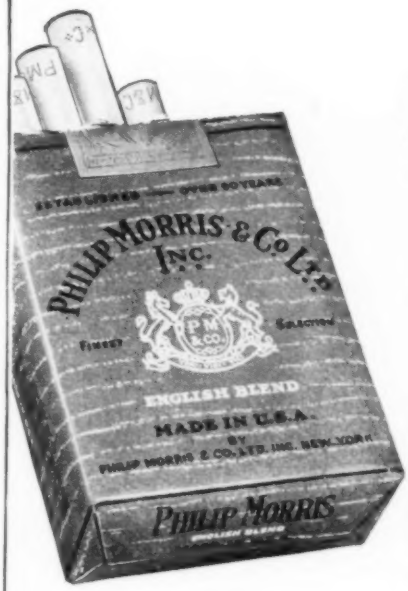

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154. Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60. Proc. Soc. Exp. Biol. and Med., 1934, 32, 241. N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.*

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"THE RELATIONSHIP OF OPHTHALMOLOGY AND RHINOLOGY. V. E. Negus. The British Journal of Ophthalmology. Vol. 27, pages 554-557. December, 1943.

The two specialties have far too few opportunities for discussion and mutual criticism. There are, however, many interesting correlations. If a penetrating injury involves maxillary antrum or ethmoid, the removal of any loose fragments of bone, or foreign bodies is advised. Sulfonamide powder should be applied to such wounds. It must not be forgotten that there is close connection between the nasal sinuses and the cranial cavity; unnecesary interference may easily give rise to meningitis. Blood in sinuses is usually absorbed. Gross injuries to the antrum are best approached through the sublabial route.

The lacrimal gland rarely enters into the sphere of a rhinologist. The author noted cessation of lacrimation when the geniculate ganglion of the facial was affected by herpes. Sometimes it may be necessary to inject Meckl's ganglion in cases of excessive lacrimation. The habit of injecting the ganglion through the orbital fissure is a bad one. The route through the posterior palatine canal or sphenopalatine foramen is not as easy as through the pterygomaxillary fossa. No case should be submitted to injection unless the application of cocaine paste behind the posterior end of the middle turbinal has previously shown that lacrimation can be stopped by blocking the ganglion.

The lacrimal sac should not be forgotten when operating on frontal or ethmoidal sinuses through the external route. The usual incision does not involve the sac, except when an incision is made below the orbit. Chronic dacryocystitis is a condition met with by ophthalmologists and rhinologists alike. Excision of the sac may sometimes be necessary, but the reconstitution of the passages is a more physiological ideal. In the past West's operation of opening the sac through the nose was employed. The operation seems to be superseded now by the external operation of Toti, or better the modern modification of Dupuy-Dutemps. Nobody should perform the operation without having had training in its special technique.

Orbital cellulitis is a misnomer. It is really a case of frontal sinusitis and acute ethmoiditis with obital edema. Usually they should be treated by lavage of the maxillary sinus, which is always also infected and by an ephedrine spray. External incision is very rarely necessary or advisable. Some cases of orbital cellulitis in children are due to osteomyelitis of the maxilla or molar bone.

There are many cases of ethmoidal and sphenoidal suppuration in which the optic nerve is not affected. Conversely the cases of papilledema and retrobubar neuritis generally do not seem to associate with nasal sepsis. In cases of iridocyclitis one may look for a focus of infection. According to the author's experience the focus is seldom in the nasal sinuses, more often in the tonsils.

Osteomas of the orbit usually have a soft basis and are not difficult to deal with. Certain nasopharyngeal fibromas may cause proptosis, and are first seen by the ophthalmologist. Some of these tumors are radiosensitive. Indiscriminate irradiation, however, is not recommended; the author has seen intractable bone necrosis result. The eyes are sometimes displaced by a carcinoma of the antrum, or by mucocele of the frontal sinus or ethmoid. Antral carcinoma should be attacked by the sublabial rather than by the external route.—M. D. H., M.D.

"DIVISION OF THE FLEXOR TENDONS WITHIN THE DIGITAL SHEATH." Sumner L. Koch. Surg., Gyn. & Obst. LXXVIII, 9. January, 1944.

Despite the pessimistic attitude sometimes expressed concerning the possibility of successful repair of flexor tendons divided within the digital sheath, good results can be secured, if conditions are favorable, and if the surgeon is willing to use sufficient time and patience. The conditions essential for success are:

1. Fingers with an adequate blood supply and free from excessive scar-tissue formation.
2. Sufficient tendon with a smooth uninjured synovial covering.
3. A retentive mechanism to hold the tendon in contact with the volar surface of the finger when tension is put upon it.
4. Normal mobility at the interphalangeal and metacarpophalangel joints.

The author elaborates on each of these points, stressing the following: It is hopeless to expect free movement, if both tendon surface and tendon sheath are injured. At least one-half of the normal gliding mechanism which nature has provided must be present, if free movement is to result. The advice sometimes given the surgeon to anchor a divided tendon to the surrounding tissues, so as to prevent retraction and facilitate subsequent repair, is ill-conceived, because it leads to dense scar formation. A tendon which has retracted into the palm may be brought distalward through an intact sheath. If the available tendon is irreparably damaged, one must provide a tendon graft, which is perferably taken from the sublimis tendon or the long extensor tendons to the dorsum of the foot. If a retentive mechanism is necessary, a new annular ligament is formed by passing a slip of normal tendon around the finger and suturing the ends at a point away from the gliding mechanism. At all times it is important to preserve all of the fibrous tendon sheath possible.

For the details of tendon suture, reformation of the fibrous sheath, closure of the finger incision, suture of the proximal end of the graft to the proximal segment of the tendon, the reader is referred to the original article.

Early active movement is not necessary to prevent adhesions. The hands are immobilized in optimum flexion for six to seven days. The dressing is left undisturbed during this period. Active movement, without permitting relaxation of the flexed finger and hand, is begun at the end of the third week. Some support is provided in a partially relaxed position until the end of the fifth or sixth week.

The author reports forty-one cases of secondary repair, of which a tendon graft was necessary in twenty-seven. Primary union took place in all but three cases. —E. D. M., M.D.

KEY TO ABSTRACTORS

M. D. H., M.D. .....Marvin D. Henley
E. D. M., M.D. .....Earl D. McBride

In the continuous world process, medical science has developed from prehistoric beginnings to its present status for the purpose of preserving the human race. Objectively considered, everything that medical men do or have done in the never ceasing changes of this process has aimed to produce results that were intended to be of enduring utility and value. All such results can be designated as conforming to the purpose of medicine and it is not always necessary that the medical workers and thinkers that are tending toward this purpose shall have the consciousness of purposeful action in their minds, but it is absolutely necessary that such workers should be mindful of the contemporary and preceding status and course of the medical changes which they desire to influence. This is another characteristic in which medical history and general history differ, for in general history great changes are often effected by persons who appear to act instinctively, unconsciously, without a knowledge of the inner connection of their action with the needs and intentions of their period.—Master Minds in Medicine. John C. Hemmeter. Page 104. New York Medical Life Press. 1927.

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